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# THIS MYSTERIOUS LIFE

By

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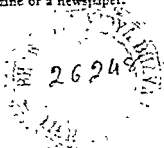
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- THE  
PAL ELECTRIC PRESS,  
LUDHIANA.

TO  
GANDHIJI

whom the author  
looked up to as the pillar  
of human edifice in the darkest  
period of his life

AND  
TO OTHERS

— especially NETAJI —  
who could opportunely pick up  
the thread of the movement  
against various kinds of  
universal tyranny.

## P R E F A C E

THIS BOOK may be regarded as the first of the series by the same author for the students of politics (particularly those who desire to follow the facts and reasons for the creation and establishment of Pakistan) and for all others who are really interested, anxious and enthusiastic—let alone the past—to carve out a new history for their motherland it would form a sound foundation for practising their motivation for building up a glorious destiny for their beloved country. It is equally useful for students and teachers it is educative in nature—educative in the sense that it would foster in them firm and sound foundation of character by guiding their mental attitude into the right direction (man's character is the result of his mental attitude) and thus by coexistently augmenting their receptive power assist them in their studies

The welfare, prosperity and progress of a country—nay, its very fate—depends upon the soundness of the rules of life it practises, while its poverty, misfortune and backwardness are the result of the continuous use of ages-old wrong principles. We were slaves for a thousand years for definite reasons the discussion of which, in the opinion of the author, at this time is not of urgent and of immediate importance. The rejection of the old and false tenets may check deterioration, at least, temporarily, and maintain the prevalent conditions but the real progress of a country rests upon the discovery of new principles and

their application to life—which life is not perfect and may be likened to an endless ladder. Therein lies the importance of the writer's this attempt.

Truthfully—and truth is often bitter—and totally our heritage is poor, our total experience of life is meagre, our explanation of life wrong; our contribution to education negligible—our foolish pride of the glorious past with the record of a thousand years slavery will not take us very far in order to construct we have to be wisely truthful and factually ascertain our social and moral order, which is traditional and backward. This publication is attempted by the writer for enriching our heritage, for increasing our total experience of life, for drawing attention of the public to the path towards the right direction of life by giving historical and scientific backgrounds for raising our educational standards with the motive of producing better type of leadership, and for improving our lot, if possible, by overhauling our social and moral order.

It is written from the standpoint of a positive and progressive liberal who presents the views of his opponents in an orderly and realistic manner with a helpful and charitable attitude and aims at replacing the life of emotionalism, sentimentalism and impulsiveness represented by the detrimental elements of the tenor of self complacency and self conceitedness imbibed as bad parts of our educational processes by the ingredients of intelligent self criticism, self evaluation and self analysis.

as sound constituents of the construction of a stage for raising up an edifice of a grand destiny the day will be fortunate when we would have quite a number of persons who realize what they can do and what they cannot do—who understand what are their capacities and limitations

In this attempt the author is trying to combine science and religion both aim at the same achievement, no doubt, they differ to some extent in their methods and in their application, and science, at this stage, considers the subject of spirituality—existence of life after death—beyond its domain

When we discourse on life we mean man's life—who may be credited to have occupied a pivotal position in the universe because of his mental activity Placed as he is between the unceasingly expanding macrocosm on the one hand and a great microcosm—both animate and inanimate—infinitesimal below him on the other he is urged to study and harness his natural environment for his survival and advance

The book is divided into two parts the first one deals with scientific backgrounds which would form a firm stand for the reader to follow its application in the shape of letters—the second part—and the books which are coming in its wake

The main theme running through all these composi

tions is the same an attempt to awaken the people from inertia in which they have deeply plunged, and have long been suffering. All these compositions, though seemingly of diverse character, were written to show that man is going from savageness to civilization and thus work a change in the people's outlook of life. The first two letters to Gandhiji were written with the same object, and the third one to decide that his principle of non violence is right.

The author has found out through personal talk that he has been able to veer others to his opinion or ideas, sooner or later, depending upon the mental powers of an individual. He is fully realizing his difficulties when he is expressing himself through the medium of the print, which is altogether a different matter. So owing to the increasing importance attached to the author's ideas by so many friends and others who came in contact with him the author in response to their repeated requests for the publication of these ideas has brought them forth as soon as he could under the circumstances.

The author would welcome any constructive suggestion for the improvement of the book in any way, particularly, for the increase of its value as a philosophy.

LUDHIANA (India)  
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M R NAYYAR

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PRINCIPLES OF LIFE

PART I

**PRINCIPLES OF LIFE**

# I. THE MEANING OF ASTRONOMY

Science is far-sighted. The scientist at the California Institute of Technology, Pasadena, turns his telescope costing more than a hundred thousand rupees into the awe-inspiring and immeasurable depths of space for the study of the universe. This action of his, as most of our actions are, is instinctive. He enjoys his new taste he satisfies his intellectual instinct. What is happiness after all ! It is the satisfaction of one's own mind or of one's own instincts. I say science is a philosophy of life based upon empiricism and rationalism. The wizard turns his telescope towards the moon and observes its mountains as clearly and as definitely as we see objects only a few feet off.

He surveys the moon and finds Absolute Death. No life on moon ! When he spots a dormant volcano which throws out, every now and then, hot gases, he waits to observe vegetable life around. He sees no animal life unless there be some lower life under the stones.

The law of birth, growth and of ultimate death seems to be a universal law. The mountains wear down in millions of years. Mother Earth has passed its infancy ; it shall draw upon its youth, grow and pass ultimately into death ! What then of the human population ! Shall it also freeze and petrify ! Nay, it shall live. The message of science is the message of hope. Science, the creator of hundred and thousand things of modern life, through its inventions of railway, steamship, aeroplane, telegraph, radio, wireless and other rapid and fast means

of transportation and communication has already made the four corners of the world meet. The rocket and the projectile are coming. They shall travel round the earth in three minutes. Within the next thirty years they shall take us to the moon in forty-eight hours, a distance only of more than four hundred thousand miles. The newer and faster machines would follow and survey other planets in the universe\* and transfer its population, unless some world-wide catastrophe precipitates and retards the progress of science, to other inhabitable planets before the occurrence of utter ruin and destruction to be brought about by the cold, dreadful hand of mother nature. This is the meaning of astronomy.

\* Jeans differs from Eddington. According to Jeans there is no other planetary system in the universe but our own. Admitted he is right. But who knows of millions' future!

## II. THE MYSTERIOUS STRUCTURE OF THE UNIVERSE

To us our earth is most important because we live on it, and its importance also arises from the fact that, while standing on it we take it to be the centre of the heavens which seem to revolve round our globe. It may or may not be a true picture, but the fact remains that the sky in day and the universe at night to the naked eye appears to be a blue and dark bowl respectively set with stars and inverted on the earth.

By the structure of the universe we mean what it is made of, how it is made and what is its shape. The fundamentals which constitute the universe are energy, space and matter, time is a relative term derived from the rotation of our planet on its axis and from its revolution round the sun. The immediate question that appears before our eyes is whether there is any relation between the three fundamentals, or there is only one fundamental—the other two are its issues—which is responsible for the vast universe with myriads of stars and multifarious life in it. Recent experiments on the fission of the atom and the production of an atom bomb prove beyond doubt the change of matter into energy—so matter is concentrated energy—and somewhere sometime in the appalling and awe inspiring vastness of the universe, energy the author believes, must be changing into matter, though scientists so far have not directed their attention—actually they are guilty of neglect—to the solution of this important problem.

Lastly, the problem of the shape of the universe, whether it is triangular, rectangular, square, elliptical, circular or irregular-curved, no doubt, is intricate and is shrouded in mystery. It may be spiral in form. The motion of a number of heavenly bodies is either elliptical or circular; but there are some which follow an eccentric path. To a casual glance the appearance of the universe is circular; in fact, it is an optical illusion; it looks round, first, because we stand on a curved part of the earth and, secondly, because we see through its atmosphere which is round—take a semi-circular thick piece of glass and see through it at the girder of the ceiling, it looks curved.

The current conceptions which explain the structure of the universe are the theory of relativity and the electronic theory. The universe is in the process of development; it evolves—the stars, the earth and the animal life follow evolution, they have their birth, infancy, maturity and old age and death

### III. THE MYSTERIOUS UNIVERSE

#### THE EARTH

The description of the heavenly bodies which constitute the heavens is appropriate here. We start with our globe which is one of the nine planets revolving round the sun; the remaining ones are Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto.

The primitive people supposed that the earth is flat, barring its valleys and mountains, those who lived in long stretched level plains regarded it as a circular disc. Learned men as early as the fifth century B.C., were teaching that the earth is a globe, and Aristotle, a Greek philosopher, in the fourth century B.C. mentioned of the dark round shadow of the earth on the moon during a partial eclipse as an evidence of the earth's rotundity; the disappearance of a ship on an ocean and a photograph of the earth taken from an aeroplane at a great height show the circular form of the earth.

Now every schoolboy learns that the earth rotates on its axis every twenty-four hours thus causing the alternation of day and night was explained by Pythagoras and Philolaus more than two thousand years ago, that the earth not only turned on its axis, but also went around the sun once in a year, causing the cycle of seasons, was held by Aristarchus of Samos in Greece. Due to the lethargic and retrogressive nature of man and the contradictory pronouncements of wrong-minded philosophers these doctrines fell in disfavour; and for

these pronouncements Bruno, Copernicus and Galileo had to suffer heavily at the hands of ignorance when they tried to re-awaken the world with their revised versions of the occurrence of day and night, and seasonal changes. The earth with its satellite, moon, revolves from west to east around the sun following a path of almost circular ellipse in 365 25 days outside the orbits of Mercury and Venus and inside the orbit of Mars at a distance which varies from 91,300,000 miles in January to 94,500,000 in July from the sun; it rotates periodically from west to east once in a day on its axis at the inclination of  $23\frac{1}{2}^{\circ}$  from the perpendicular to the plane of its orbit with a slight error in its regular recurrence of motion which amounts to two thousandths of a second in the course of a century, the alternations of day and night as well as the apparent daily rotation of the celestial scenery from east to west results as the consequences of its daily turning.

The earth's diameter is 8000 miles, its mass measured by special methods developed in physical laboratories is found to be  $6\frac{1}{3} \times 10^{21}$  tons; its density is 5.5 and its atmosphere, a mixture of gases—a mixture mainly of nitrogen and oxygen in proportions of about four parts to one by volume—surrounding its surface weighs  $8 \times 10^{15}$  tons and rises with its first rarefaction and rapid fall of temperature as the altitude increases to a height approaching 500 miles.

The atmosphere is divided into two layers, the troposphere and the stratosphere; the former, the lower layer of the atmosphere extends to the height of about 7 miles above sea level and is the region of rising, falling



and swirling currents and of clouds; the stratosphere is the region which causes twilight by the reflection of sunlight on its air when the sun is below the horizon after sunset or before sunrise, where air currents are chiefly horizontal, where the trails of shooting stars are noticed as high as hundred miles and where the streamers of aurora have been observed at heights approximating 500 miles, showing the existence of very thin air even at that distance. (Manned air craft, ballons carrying self-registering instruments, recently rockets and the reflection of radio beams from the ionized layers of air have been used for studying the conditions prevailing in the troposphere and particularly in the stratosphere.)

## IV. THE SOLAR SYSTEM

### MERCURY, VENUS, MARS AND THE ASTEROIDS

Mercury is the smallest of the principal planets appearing as one of the evening or morning stars in the sky with a diameter of 3100 miles and revolves, without any satellite, inside the orbit of Venus and nearest to the sun in 88 days at the mean distance of 36 million miles from the sun. When seen through a telescope it passes through all phases similar to those of the moon. The reflection of only 7 percent of the sunlight it receives marks out the absence of any atmosphere and the unevenness, though mountainous, of its surface. So the natural conclusion is that Mercury is a lifeless world with a surface subjected to the greatest extremes of temperature.

Venus as evening or morning star is the brightest of the planets and of all the other celestial bodies, has a diameter of 7700 miles and revolves without any satellite outside Mercury's orbit once in 225 days at the mean distance of 67.2 million miles from the sun; when viewed through the telescope it goes through the whole cycle of phases of the moon. Its close resemblance to the earth in size, mass, orbit; its 85 percent gravity of that of the earth in value; its evidential atmosphere in abundance comparable with that of the earth; the observation of twilight effects; the lack of evidence of the presence of oxygen in the upper levels of the atmosphere at  $-25^{\circ}\text{C}$  and a surprising amount of carbon dioxide shown by spectroscopic studies of the planet revealing the temperature at its surface as high as  $100^{\circ}\text{C}$ .—all these facts in totality—suggest the

unsuitability of the planet for inhabitation. But it may follow the same course of life as the one on our sphere in the future time of eternity.

Mars's appearance is red, its period of revolution once around the sun is 687 days, and beyond the earth's orbit its average distance from the parent star is 142 million miles, its period of rotation on its axis is 24 hours 37 minutes, its diameter is 4200 miles and the temperature at its surface is above 32°F. It has seasons like ours differing only in their length, it has an atmosphere which proved by its low reflecting power—only 15—and the distinctness of its surface is rarer than ours and contains about 5 percent of water vapour and nearly 1 percent of free oxygen in comparison with earth's atmosphere, and it has twilight band. The planet has two satellites. The changes in the dark markings of the planet from green in its summer to a chocolate brown in the autumn evidences on it the growth and decline of vegetable life and the consideration of the climatic conditions on the planet put serious restrictions on the appearance of animal life.

The asteroids are also called minor planets which are more than forty thousand, varying in size from one mile to 480 miles in diameter, they appear like discs when viewed through large telescopes and revolve around the sun from west to east mostly between the orbits of Mars and Jupiter but some have highly eccentric or elliptical orbits and venture out to make closer approaches to the earth than do any of the principal planets.

## JUPITOR, SATURN, URANUS, NEPTUNE AND PLUTO

Jupiter is the largest planet with a diameter of 88640 miles, it revolves round the sun once in nearly twelve years at the distance of almost 700 million miles, its period of rotation is about 9 hours 50 minutes, its atmosphere which is 8000 miles deep and consists as revealed by spectroscopic analysis of hydrogen methane and ammonia, and covers a layer of ice 17000 miles thick around a rock core some 35000 miles in diameter. It has eleven satellites.

Saturn, a bright yellow star in our skies and the most remote of the bright planets revolves elliptically with a diameter of 74100 miles once in 29½ years at the mean distance of 886 million miles from the sun its lowest density is 0.7, it is encircled by a very thick atmosphere composed of ammonia clouds at  $-15^{\circ}\text{C}$  and methane, and its period of rotation, determined spectroscopically at the equator is specially 10 hours 02 minutes. The planet has nine satellites and is encircled by three concentric rings of meteoric nature running 171000 miles across.

Discoveries of planets and stars and histories of subjects are fascinating and important because they explain the meaning of progress regarding which wrote Charles Darwin in his 'Descent of man'. Our ancients did not even entertain the idea of progress nor do the Oriental nations at the present day. But here we are concerned with facts and conclusions and these facts are about

Uranus, Neptune and other astronomical objects Uranus and Neptune are blue-green giant planets with their respective diameters of 32000 and 31000 miles, are encompassed by extensive atmospheres containing methane, rotate from west to east once in 10 ½ hours and 15 8 hours respectively and revolve once in 84 years and 16½ years at nineteen times and thirty times the earth's distance severally from the sun Neptune has a satellite which revolves from east to west against our expectation

When seen in large telescopes Pluto is yellowish, and in all probability is smaller in size and mass than the earth The planet goes around the sun in 218 years at the average distance of 3670 million miles Its orbit is more elliptical than that of any other principal planets Pluto may collide against Neptune after 240 million years

## COMETS, METEORS AND METEORITES

The solar system does not finish with the sun, planets and satellites, it also includes comets, meteors and meteorites

In ancient days the appearance of a comet boded ill to mankind, superstitious folk regarded it an omen of some coming calamity, in later days people feared the destruction of the earth by its collision, and nowadays, we watch it with great interest as one of the most absorbing natural objects.

A conspicuous comet has a head with a starlike nucleus near its centre whence are shot out bright jets in various directions, and a luminous tail spreading out across the sky in direction opposite the sun A comet appears to be in process of disintegration It usually

travels in an elongated orbit passing across the orbit of the planets with its period of revolution not exceeding a few hundred years. A comet shines partly by reflected sunlight and partly by fluorescence stimulated by the sun's radiation.

Shooting stars are meteors which are in flight in the air. Meteors are generally small solid bodies which revolve around the sun. When caught by our atmosphere they are mostly reduced to dust and gas before they reach the ground and leave blazing trails. If it partly survives the consuming heat of its flight in the air it is called a meteorite. A meteorite may be stony or composed of alloys of nickel and iron, it may weigh several tons (50). A meteor appears to be a disintegrated comet.

## THE SUN AND THE MOON

The sun is one of the stars, the only one near enough to be examined by a telescope in detail. The other stars—some far bigger than the sun—are too remote to be studied. They appear as mere points of light when viewed even in the largest telescope. When sunlight is analysed by the spectroscope the spectrum reveals the presence of sixty chemical elements in the spectrum, an unbroken band of seven colours from red to violet, characteristic of a luminous solid, liquid or opaque gas, or, it gives rise to the bright line spectrum, a succession of colored lines, from red to violet on a dark background, each colored line in the spectrum being characteristic of each gaseous element emitting a series of wave lengths present in the source of light, or, it produces the dark line spectrum, a succession of dark lines on a continuous seven colored

background, inherent of the presence of cooler gases that intervene between the observer and the source of light.

The displacement of bright lines in the spectrum shows the approach or recession of a star towards or away from our sphere and is directly proportional to its speed. Each square yard of the sun's surface radiates 70000 horsepower of energy. Its surface temperature of  $5750^{\circ}\text{C}$  found by Stefan's and Wren's laws, rises rapidly to millions of degrees at the sun's centre.

The sun is a gaseous globe with a diameter of 864000 miles; and it is a third of a million times as heavy as the earth with an average density of 1.4 times the density of water. When viewed through the telescope the photosphere, the back portion which is back only in comparison with two more flimsy gaseous envelopes, namely, chromosphere and corona, above the photosphere shows a mottled appearance of bright granulations spreading over a third of the surface, and of dark spots—also called sunspots—on the edge of the photosphere varying from a few hundred miles to more than 5000 miles in diameter.

Sunspots are sharply divided into umbras and penumbras, they last from a few days to a few weeks moving across the disc from east to west with the sun's rotation. These dark spots on the photosphere have given birth to various speculations as to the cause of their existence. Sunspot maxima are accompanied by magnetic storms which cause induced earth currents interfering with telegraph and telephone service and disturb the ionized layers of our atmosphere disrupting short wave radio communica-

tion; they are also followed by displays of aurora or polar lights resembling the glow in a vacuum tube in the form of luminous arch low in the rarefied upper atmosphere of the northern sky with its highest point towards the magnetic pole and with streamers like searchlight beams rising above the arch which may be palagreen, vivid green, yellow or red.

Our knowledge of the photosphere, chromosphere prominences which appear above the chromosphere and at times reach heights of hundreds of thousands of miles, and of the corona is incomplete. The cause of the one-way shifting of the sunspot zones is still as unknown as the cause of varying in number of sunspot groups in a well-nigh periodic manner. The reversibility of the polarities of the sunspots of those of the preceding cycle is another effect which also requires explanation.

The Moon, the earth's attendant, is smaller than some of the satellites of the other planets, but reflects sunlight more than any other satellite. The moon and the earth revolve together around the sun once in a year, and during their yearly revolution they mutually revolve around a common centre once in about  $29\frac{1}{2}$  days. The moon's diameter is 2160 miles, its average distance from the earth is 238860 miles; and its orbit is nearly a circle—an ellipse—of small eccentricity. It passes through its phases caused by the sunlight reflected from the varying surface of the moon in  $29\frac{1}{2}$  days. The moon rotates on its axis once in  $27\frac{1}{2}$  days. About 41 percent of the Moon's surface remains hidden from the earth.



When looked through the telescope the moon is mountainous ; the peaks first catch the rays of the sun at sunrise in the form of little stars which gradually spread out to join the sunlit hemispheres , some of the peaks are as high as 26000 feet above the plains , the heights of the lunar mountains which stand out in the space of circular walls can be figured out by the length of their shadows and the altitude of the sun at the time in the moon's sky. There are about 30000 craters—small and large—seen through the telescope on the moon , the inside of some craters is depressed several thousand feet below the plain and in some the floors are raised to the heights of their walls, the principal features of the moon's surface are the seas, the mountains and the rays—the last ones are bright streaks up to 10 miles wide and up to 1500 miles long, and start from places near a few of the craters and run over mountain and plain alike — the cause of the rays is not yet known — and the rills which are clefts—some are irregular and some are straight for long distances—are about half a mile in width and of unknown depth

There is no atmosphere round the moon, as is proved by the perfectly sharp appearance of day and night without twilight , the clear lunar disc even near the edge, where a thicker atmosphere is expected, shows its absence; and the abrupt disappearance of a star behind the moon without producing any dimming or reddening effect points out the non existence of air on the moon. The explanation of the cause is that the surface gravity of the moon is too feeble to hold an atmosphere around it in an effective manner. So the moon is lifeless , it is dead—there is no life activity on it

The occurrence of an eclipse is a common sight. Primitive people have ludicrous explanations for its occurrence. The lunar eclipse takes place when the moon at the full phase passes through the earth's shadow, and the solar eclipse is caused by the occultation of the sun by the coming of the moon at the new phase between the sun and the earth on that part of the earth which goes through the moon's shadow.

To sum up, the moon is lifeless—even vegetable life does not exist on the satellite—because of the lack of atmosphere, of the extreme changes of weather and of the deadly ultraviolet rays from the sun. The moon is a horrible place where the sky by day and night is black, starry, cloudless and twilightless, where the meteors hurl down noiselessly with their original sizes and speed, where the sun and the stars circle around from east to west once in  $27\frac{1}{2}$  days and the earth appears four times bigger than the moon going through all its phases without rising and setting.

## V. STARS

Now we come to the starry world—this world of stars which are the main patterns of the construction of this part of the universe may be grouped into three divisions near stars, stars of the galactic system and those belonging to extragalactic systems. The stars are too distant from the earth for the study of the conditions prevailing in them, when examined in the telescope they look like small lamps. But by the physical and astronomical methods developed we can find their distances from the earth, their sizes and diameters, their weights, their densities and temperatures, and then compare them with one another by these values at our disposal and with the sun's as our standard. So we require to revise our knowledge of the sun at this stage.

The sun's diameter is 864000 miles. Its average density is 1.4 times that of water. It is approximately a third of a million times more massive than the earth. Its surface temperature is  $5750^{\circ}\text{C}$ .

Among the near stars the nearest one, Alpha Centauri, is at a distance of 26 million million miles from the sun. They number more than a quarter million. The stars are not fixed they move, including the sun, through the star fields as well as rotate. Their speeds, as revealed by the spectrum analysis and calculated, range from 5 to 20

miles a second. Some stars are blue, some yellow and some red—they differ in their composition and this fact throws some light on the evolution of elements—depending upon their surface temperatures which range from  $2000^{\circ}\text{C}$  to  $5000^{\circ}\text{C}$ , the temperatures at the centres of the stars rise to millions of degrees. As to their size they vary enormously and can be classified into giant, supergiant and dwarf stars. The red star, Betelgeuse, is a supergiant its diameter is three or four hundred times greater than that of the sun. While a dwarf star may be as small as a planet. The stars differ in mass as well but with much less difference—which nearly ranges from one fifth to five times the sun's mass. In density also they differ from a thousandth of the density of the air of the earth's atmosphere in the red supergiants to tens of thousands times as dense as water in the white dwarfs.

The sun represents a fair average of the visible stars in its size, mass, density, composition—even in the same proportions of the same materials—and temperature. It may again represent the average in having a family of planets, though no evidential proof exists.

Binary stars are related pairs which are moving together through space and a number of them are mutually revolving and going together at the same time. There are many hundreds of known double stars their orbits are generally more eccentric than those of the planets and their periods of revolution vary from hours to months and years. In the case of mutually revolving binaries periodic

fluctuation of light takes place.

The energy released by atomic transformations in the interiors of stars comes up to their surfaces for radiation and thus keeps them shining. In some stars the release of atomic energy is uniform, while in others the supply of atomic energy is excessive—the supply may be regular or irregular—with the consequent result that they expand and contract, giving rise to variable and irregular variable stars whose light respectively fluctuate periodically—after a short or a long period—and irregularly because of cooling and heating effect produced by the expansion and the compression of the stars.

Star clusters are collections of stars—a collection as a whole moves through the star field. They are classified into open clusters which are made of separate and less compact stars easily distinguishable with the telescope and globular clusters which consist of great balls of stars. They are generally invisible without the telescope. There are about four hundred open clusters, they all lie within or close to the Milky Way. An open cluster may have members running from a few thousand to twenty thousand in it. Giant stars are scarce among them. While a globular cluster contains about fifty thousand stars—giant and blue stars—in a globe of a diameter of a hundred light years. There are a hundred globular clusters in the galactic system.

**The Galactic System.** The most salient feature of the galactic system is the Milky Way formed by the combined light

of a vast number of stars in it. The occurrence of atomic explosion has been considered. The system consists of 100000 million stars divided into a double armed spiral of stars, groups of stars, with much interstellar gas and dust. The system is flat, vast but limited, it has a diameter of 100000 light years and rotates around its centre, which is 30000 light years from the sun, once in more than two hundred years at a speed of 170 miles per second at the sun's distance.

The nebulae of the extragalactic systems are vast stellar systems far beyond the galactic one. But the nebulae in or near the Milky Way are clouds of gas and dust in interstellar space which are noticed only when illuminated by some near stars. Some of these nebulae become fluorescent because of the ionization of the atoms of the gas by the action of the intense ultraviolet radiations of very hot stars. They contain hydrogen, helium, oxygen and nitrogen.

**The Extragalactic Systems.** The extragalactic nebulae are far outside the galactic system. They are of the shape of the spiral and other associated structures. Now they are called extragalactic systems; some authorities name them galaxies.

There are 100 millions of extragalactic systems with the average separation of one from another of 2 billion light years within the radius of 500 million years—the greatest distance the present largest telescope can now survey. They are made of a limited number of patterns.

which are of three general types—spiral, elliptical and irregular systems. Three fourths of these systems are in the *spiral form*—which may be of the normal or of the barred type. In the case of the normal spiral—whether with a massive nucleus and thin arms or with an inconspicuous nucleus and massive arms—the two coils start from opposite sides of the central nucleus and whirl around it in the same direction and in the same plane. In the case of the barred one the two ends of a bright bar which form a continued projection of opposite sides of the nucleus are the starting points for the two coils. The mechanical significance of any of these two forms of the spiral is not yet clear. The very spiral forms of galaxies suggest their mutual gravitational influence upon one another, the flattened forms of spirals suggest that they are rotating, their rotation is proved by the Doppler displacement of the lines in the spectra. The elliptical systems are more flat and smaller in size than the spirals, they are assemblages of stars which have not yet resolved into stars with the exception of a few. The irregular extragalactic systems are smaller, nearer and less luminous than the spirals, they comprise 2 or 3 percent of the exterior systems, and do not rotate.

A spiral when examined with large telescopes is found to contain stars of the different colours known as variable stars—novae (non periodic explosive variable stars) open and globular clusters, and galactic nebulae both bright and dark—the same kinds of objects that make up galactic systems.

In fact, spirals and other extragalactic systems are separate galaxies which differ in size and measure from 10000 to 50000 light years in diameter, our galactic system which may be spiral in shape, appears to be a member of a dozen or more systems—this combination of systems is ellipsoidal, and its longest diameter is of a million light years.

Besides there are associations of exterior systems called clusters of extragalactic systems. They exist in double and multiple systems. There are also about twenty clusters of systems—larger assemblages made of larger units of spirals, elliptical and irregular systems—each combination is composed of about five hundred members. In addition there are two vast globular assemblages of stars in this region of the universe, they do not fit in with the usual three types of systems.

Lastly, on the basis of introduction of a correction by Einstein in 1917 for mutual repulsion of bodies which force is directly proportional to their distance apart in the formula of Newton's law of gravitation, Lemaitre, in Belgium in 1927, concluded that Einstein's mathematical universe would not be stable, it is expanding—the red shifts in the spectra of the extragalactic systems if they are really Doppler effects—unnoticeably minute effects—support the recession of the systems. It means the whole assemblage of the galactic system and the extragalactic systems is expanding, the separate systems are getting apart. But



we cannot accept this view of expanding universes—it may be true—in the face of wishful and common-sense observation, though without any mathematical and experimental proofs, which leads us away from the idea of expanding universe to the conception of its being both extensile and contractile in nature: matter which may be defined as concentrated energy is changing into energy in the universe on account of atomic disintegration increasing space; while somewhere and sometime in the universe the reverse process of the change of energy into matter must occur decreasing its size, although the simultaneous expansion and contraction of the universe would not be to the same extent, and, at present—measured in the time-units of eternity and infinity—the universe may be more expanding than contracting or only expanding.

## VI. THIS MYSTERIOUS EARTH

The cosmos is constituted of galaxies each galactic system has a spiral form which rotates, and is made of some thousands of millions of stars which exist in star clusters and stars themselves separated by immense distances, and recedes at the speed of 20 000 miles per second, showing that the universe is expanding. Our sun with its family of planets is a constituent of one of the galaxies which differs from others in its larger size. Indeed, the creation of galaxies and the production of star clusters and the separation of stars in a galaxy forms the first stage of evolution ending in the formation of a star. This was Nature's first experiment in the right direction.

A star is a mass of gaseous matter — of nicely graded size — ordinarily endowed with intense heat. The internal temperatures of stars range from 10 to 20 million degrees Centigrade, the temperature is determined by the application of the laws of Physics and mathematical calculation. At this high temperature of 10—20 million degrees the atoms of light elements such as of oxygen will be stripped naked of its electrons to the nucleus and the atoms of heavy elements such as of iron and lead will hold only a few of the innermost satellite electrons. So the sun whose temperature is estimated 10 million degrees is populated with

free electrons travelling with the speed of 10000 miles per second, stripped atoms or protons of hydrogen speeding at 300 miles a second. (heavier ones at 40 miles a second) and photons or quanta of radiation consisting mainly, at this temperature, of soft X Rays travelling with the speed of light. The sun will continue to shed its heat and light for billions of years, feeding on its own matter which changes little by little into heat and light waves. The generation of sub atomic energy which maintains sun's heat obtained from the process of the transmutation of hydrogen into not hydrogen at 15 million degrees Centigrade in the hottest part of the sun occurs in the form of photons of the order of soft X Rays, the photons — not the electrons and protons which are held and retained in the interior of the sun by the pull of gravitation — rush with the velocity of 186000 miles through a rioting mob of electrons and protons and after whirling round aimlessly in the interior for more than a million years appear accidentally on the surface, and ultimately, the original photons of the magnitude of X Rays after transforming down to the quanta of radiation of light and heat in passing through the last few thousand miles of comparative cool matter shoot out into the open space in the form of light and heat waves. The sun will go on radiating heat at the same rate for a very long period of thousands of millions of years after which period it may show signs of exhaustion of the sources of sub atomic energy. The picture drawn here is not

is very speculative, it is built on the basis of fragmentary experimental and astronomical evidences.

Nature's next experiment was on stars. Masses of matter greater than that of the sun have a strong tendency to subdivide—some of the stars either because of their spinning too fast or because of their strained condition due to the radiant heat imprisoned in them divided themselves into almost two equal parts each revolving around the other. There are about a thousand double stars located by the telescope—it was one of her experimental failures. Nature tried her hand next on a star which under the influence of another star allowed huge masses of matter to be spurted out of the sun, to revolve and condense into small globes or the planets—lumps of matter small enough and dense enough to cool. The effects of releasing matter from its usual temperatures of millions of degrees and permitting it to cool are self evident and far reaching—it is the second impulse of evolution which has ended with the formation of rocks, minerals and other materials.

All the material objects of the universe are made out of the ninety two elements which appear to have been fashioned in nature from the same primordial element through the process of evolution. This process of matter building occurred somewhere and sometime—millions and millions years ago—though we do not know anything practically of its history. At the hottest central part of a star the temperature may be as high as 20 million degree. At

this temperature—as the spectra of blue stars show—the presence of heavy metals is not noticed at least it is latent, and the presence of heavy metals and carbon asserts itself in the spectra of red stars the temperatures of which are low in comparison with that of blue ones. Among the 92 atoms representing the same number of different elements the atom of carbon is peculiar and is endowed with special properties not possessed by other atoms the carbon atoms can link themselves in long chains—even to the number of thousands—giving rise to more and more complex structures. The carbon atom is most important to us—its study interesting and fascinating,—because it is directly connected with life itself—life exists only with the presence of the carbon atom. This power of carbon to build more and more elaborate structure has given birth to a third impulse of evolution which has resulted in the start of a tiny living cell and after a number of unsuccessful trials of hit and miss ended in the culmination of man—the glory of this earth. The record of the history of development of living forms passing over nearly a thousand million years is found buried in fossil remains. Man is superior to other existing forms of life—not to talk of the dead ones of gigantic size long rejected by Nature as her failures—and has saved himself from threatened extinction on many an occasion on account of her bestowal of the gift of brain upon him.

## VII. EVOLUTION OF THE EARTH

Our lives are not our own. In fact, we depend for existence on a large number of delicate adjustments of powerful physical forces in the interior of the earth and gravity.

Man used to walk on fours. It was through the process of mutation that he started on twos. It was then that he began to ask where, how and why. Ever since he has been improving both in body and in mind. He has survived because he was better fitted first in mind and then in body. He could defeat barehanded tigers and catch elephants. Gorilla is a strong animal having the habits of a primitive man. Careful study of the Vedas with open and liberal mindedness will reveal the fact that our forefathers had no marriage system their system of marriage was the system of animals. The Empire of Reason had dawned upon him and naturally he began to ask where this earth came from. So the authors of Puranas reasoned out that this earth was standing upon the head of a big snake or upon the horn of a bull. When the bull gets tired it changes its side and earthquakes ensue. We may ridicule these early explanations but they were surely rational thoughts in the days gone by. The authors of Upanishads gave an evolutionary explanation of the origin of the globe first

was the Spirit of the Universe then came Akasha (ether) fire wind and water, and then the earth grew

We owe a great deal for the advancement of knowledge in this direction to such noted scientists as La Place Jeffreys Fiddington Sir James Jeans Thomas C Chamberlain, Harlow Shaplev Miltun Daly, Wegener Argeon S r Oliver Lodge, Rud Staub and others

Immeasurably and incalculably time ago there came another star which in its cosmic travels approached our sun close enough to disrupt the surface of the old Sol Masses of gaseous matter so fling off and attracted by the visitor broke up into spheres which went spinning dizzily through space and are now revolving about the sun as the nine planets This theory of the origin of the planets is supported by two observations that the telescope does not reveal any other planetary system in the universe and that all the planets revolve round the sun from west to east and in the same plane Cooling gradually, these gaseous masses of matter passed into liquid and solid phases the process of cooling decreasing from rapid cooling at the surface to infinitesimality at the core which is 4000 miles deep Our planets interior still consists of hot incandescent and plastic material the fact is proved by the flowing out of lavas in different places Sometime in the process of evolution its iron content began to arrange itself in obedience to the dictates of electromagnetic waves from the higher regions resulting in the formation of our North and South poles The

original gaseous matter gradually changed into different elements and their compounds. Our globe was once fluid and underwent stratification itself by gravity, the heavier materials sank towards the surface, and the whole mass finally arranged itself in layers evolving a solid earth. It was then under water, and the substances dissolved in it precipitated adding sufficiently to its thickness. Air and other gases were over water.

The layman and the ignorant ask how the earth is held by the sun. It is kept along its orbit by the same kind of force as is possessed by a magnet which attracts a needle, though we do not see the force, but we do realize it.

Einstein's theory of relativity replaces the concept of force by that of the geometry of the gravitationally strained region surrounding a heavenly body. The relative theory explains the discrepancy of faster rotation of the major axis of the orbit of Mercury than that suggested by the gravitational principle and also some other mysteries in science.

The earth, no doubt, is a huge magnet with its magnet - 10 poles near the North and South geographical poles. The supposition of northern and southern geographic hemispheres, explains easily the various phenomena. But the origin of the earth's magnetic field is still an unsolved problem. The collection of a great mass of terrestrial magnetic data shows that the phenomena are related to atmospheric and solar electrical phenomena.



The explanation that the earth's magnetism is due to the iron content of the earth can be dispensed with when one considers the fact that a magnet loses its magnetism when heated. It is known that the inner portion of the earth is intensely hot. The recent explanation given by Blackett that a heavenly body in fast rotation would possess magnetism has been hailed as great a discovery as any by Newton or Einstein.

Puny man, with all his boast of knowledge, stands helpless and bewildered before the mysterious, awe-inspiring, dynamic and overwhelming Nature. We cannot answer such simple questions. Why do the younger ones die before the elders against our expectation? why do the offspring of cattle take far less time in learning to walk than a child? and again what is the cause of the earth's magnetism?

If originated in water within a few degrees of temperature and other physical conditions. Fairly embryonic resemblances our body mainly composed of water, our daily requirement of the same salts as found in sea are by no means mean arguments for the thesis proposed.

During the early part of its history our earth met a momentous shock which resulted in a disruption, probably due to tidal motions of extensive speed of rotation and perhaps helped by the attraction of a new heavenly body travelling in the firmament. The mass thus ejected later became the moon. According to Hindu mythology it arose from the agitated floods in the ocean caused by the churning of its waters by the gods. The

water accumulated in the sea and the earth raised its head. It was then that for the animals new life started. Some of them died out because they could not adapt themselves to newer conditions of life, while others succeeded. One of the groups of survivors are we. Powerful forces owing their origin to that catastrophe resulted in breaking up the original single continent into several ones, which slowly floated apart. The forces resulting from the pressure of the accumulated water, gravity and other physical forces in the mysterious interior of the earth lifted up huge masses of land forming chains of mountains like the Rockies, the Andes, the Alps, and the Himalayas. That is why marine remains are found on some of the rocks.

The startling similarity, both physical and geological, between the coasts of North and South America with those of Europe and Africa is not due to mere accident, but because ages ago the continents broke away from each other and have drifted horizontally over the surface of the earth. Some day, in the dim past, North and South America were united with Africa, Asia and Europe and formed one gigantic continent, and Australia, New Guinea and the whole chain of islands to the north formed a part of south Asia.

The identity between the marine remains in the rocks of Newfoundland with fossils of the same age found in Wales, Scotland, Norway and Denmark, the similarity between plant and animal life in the jungles of South

America and the wilderness of Africa, and the evidence of relationship between animal life in Southern Asia and Australia combine to prove that the earth once consisted of one immense piece of land

With the passing of time the opening between the western Hemispheres and Europe and Africa slowly widened and water ran up into the fissure forming the Atlantic ocean. This opening is still growing in width.

Only a few centuries ago, in the absence of railways, steamships, automobiles, aeroplanes, telegraphs and other means of transportation and communication our earth was considered to be infinite, now we know even its weight. Similarly we may be mistaken in thinking of the universe as infinite, though it is boundless.

Patient and ingenious geologists have now discovered a new method of reading the heart of the earth, and they do this with the help of highly sensitive seismographs. Since the dim past our earth has been and is cooling with the consequent solidification and contraction of matter resulting in the development of strains. Thus the rocks of the earth's crust have been and are being strained every day, and on their being released elastic waves from many centres are sent out. These waves travel great distances around the earth, and while passing through mountain ranges and vast plains they raise and lower big cities like New York and Tokio many times a year without being ordinarily noticed. These waves are of different character and are utilized for studying the structure of the

earth. The waves set in motion by the hard knock of an earthquake or some other earth shock are analyzed on their reflection for studying the structure of the body of the globe. The results thus obtained are amazing in character and far-reaching in conclusions. They reveal the shelled character of the earth—the shells which are relatively homogeneous in character surround a core consisting of iron or nickel.

So our earth consists of a series of shells surrounding a core which at its centre bears the tremendous pressure of 50000,000 pounds per square inch and has a temperature, probably, of more than 50000°C.

The outer shell is called the crust of the earth, and is about thirty miles deep. The crust is formed of about 25 per cent firm land and 75 per cent ocean with 2000 feet of mud on its bottom. The ocean floor has its valleys and plains just as has dry land; it has also its plant life which is microscopic, but is full of vitamins, proteins, fats, oils, carbohydrates and other important ingredients of human diet, and in fertility equals some of the best surface farm land. The floor of the North-West Atlantic constitutes the solid rock crust of the earth covered with mud and clay, and is relatively flat. In comparison with the commonest rock, which is a variety of granite, of the outer shell that of the underlying one is a heavier dark coloured basalt resembling some of the volcanic lavas. Beneath that are shells of still denser materials resting upon the actual core at the depth

of 1600 miles. According to the newest scientific finding the earth encases a gigantic atomic fission pile of potassium which radiates heat to keep the earth livably warm and in rotation.

And our earth is now a distorted, warped planet which is constantly undergoing change since immeasurably long time to overcome its deformities. It is in reality—though apparently so solid stable and immovable—continually moving on a thick earth shell of hot liquid gases. The earth revolves round its axis once a day, and during its daily travel there arises a difference in speed between the crust and its inner portion causing slips which jar the whole planet. In the earth's eventful infancy these landships used to be of far severer intensity and they account for ancient deluges including Noah's mentioned in the Bible, the Quran, Manus and the Puranas. Accordingly earthquakes volcanic lavas new mountain ranges and other terrestrial events are due to landships of the earth.

Since the world began, our earth has constantly been changing, neither earth nor water were exactly the same face. Even in its yearly travel round the sun it does not trace exactly the same line of path. Thus Mother Earth struggling steadily through huge earthquakes horrible floods restless glaciers, terrible storms and pounding oceans has reached this stage of life. It is still battling hard to overcome its lack of symmetry.

## EFFECTS OF THE EARTH'S ROTATION

Some of these effects are the deflection of air and ocean currents, the whirling of cyclones, the changing direction of the Foucault pendulum, and the bulging of the earth's equator, they may be regarded as respective proofs of the earth's rotation on its axis whose extremities are its north and south poles.

In this connection the Foucault's pendulum is quite interesting if a heavy iron ball suspended by a wire of 200 feet long be swung in the north and south direction, the pendulum slowly changes its plane of oscillation in the clockwise direction to the dictates of the earth's rotation. The rate of the change in the direction of the pendulum is different at different places at the equator there is no change at all, at Chicago the rate of change is  $10^{\circ}$  an hour; and at the poles it is  $15^{\circ}$  an hour—with the consequence that the plane of the oscillation turns completely around in a day. Another important consequence of the earth's rotation is its centrifugal effect—the equator is more than 13 miles higher in slope than are the poles, but the Mississippi River flows up towards the equator because of the earth's rotation. On account of the centrifugal effect of the earth's rotation all its parts tend to move away from the axis, and its result has been the bulge at the equator. The centrifugal effects of the earth's rotation also lift the object and thus lightens its weight, an object weighing 100 pounds at the poles weighs one pound

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less at the equator, where the centrifugal effect is greatest; a part of decrease in weight is, of course, due to the longer distance of the equator from the earth's centre. Another noticeable effect of the earth's rotation is wandering of the poles through a distance of 40 feet from its average place.

**At the Pole the Stars Never Set.** The north or the south pole is one of the extremities of the earth's axis, and so it encircles the shortest space in comparison with other places of the rotating earth. So naturally the stars there overhead never set, and go around in circles parallel to the horizon. At the north pole the sun goes on shining (for 24 hours a day) from about 21 March to about 23 September, and the moon rises and sets once a month. All these happenings show that the earth rotates.

## TERRESTRIAL ASSOCIATIONS

**The Blue Sky.** During daytime the sunlight air outshines the stars and conceals most of them. Sunlight is yellow and is composed of seven colours which refract to different extent. Among them the blue light is most diffused by the air molecules when the sunlight passes through the atmosphere. So the sky on a clear day is blue coloured, and the colour deepens as we go away and away from the vaporous and dusty lowest layers of the air; we expect blue changing to black at a height where air finishes.

At sunrise the blue light is scattered away by the greater thickness of air and only the red one passes through successfully, that is how the sun looks red after its rising or before its setting,

**Twinkling of the Stars.** Light changes in direction on passing obliquely from one medium to another, and this is called refraction. Light from a star on entering air bends and goes on changing its direction more and more with the increasing density of air till it meets near the earth's surface the air in commotion due to the rising and falling of warm and cold currents and horizontal movements of layers of different densities — which fact causes sudden changes of refraction makes light unsteady, causing the star to twinkle.

**Rings around the Moon.** Lunar or solar halos are fine examples of refraction effects. They are produced on the concentration of the reflected moonlight in places forming the circumferences of the luminous rings by ice needles and snowflakes in the high cirrus and cirro stratus clouds.

**The Duration of Twilight.** Twilight — evening or morning twilight — is the consequence of the sun's shining on the atmosphere above us. Its duration naturally differs with the time of year and with place on the earth, it is shortest at the equator where the sun shines vertically.



**The Aurora.** Something has already been said about it in the last chapter. The aurora occurs in the northern and southern skies, and is caused by the action of ultraviolet radiation and electrified particles from the sun upon the atoms of the rarefied upper atmosphere illuminating them in the shape of an arch.

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## VIII. MAN AND HIS HISTORY

It was in America, when the author was studying at Purdue University, that one day at about five in the evening on hurriedly opening the back door of the University library he was suddenly frightened at the sight of a big monkey like object, which he took for a real monkey, sitting in the same posture as many a monkey at Haridwar with their heads held out does when looking over the shed of a verandah of a kitchen with their hands underneath. He rushed back. But on a little reflection the idea occurred to him that America is a cold country and monkey is usually found in a hot one. He turned back and on opening the door cautiously noticed the garment of a girl. While passing by her, he was stealthily and constantly staring at her face, absolutely lost to observe the ordinary manners of politeness. The idea went across his mind she is a case of reversion, at least, in physical look if not in mental powers, and Darwin was right. Thereafter he began to realize the greatness of Darwin and visualize how the world has been benefitted by his discovery of the Law of Evolution, not only in the advancement of the science of Biology and Medicine but in every branch of human knowledge. But one point which stuck long to his mind was the gradation of human life which he wished

not explain from the standpoint of the theory of evolution until he came across about a year later the theory of chromosomes. He was then convinced of the false hold on his mind of the Law of Karma. Of course, the idea did not, then, occur to him that gradation in human life is simply due to the unequal development of mental faculties in different individuals. Idiots cannot be rich—everybody is not Gandhi. The author is not a biologist; he has been a student of chemistry through and through. No doubt, he had some elementary courses in biology. He is not writing this essay with the purpose of convincing the people of the doctrine of evolution which is an established fact, nor is it for those who ask why a cow does not bear a human child (the answer to this question is heredity, which is directive, in reality, evolution itself is directive); but with the object of persuading the reader, if he can, to the point : man is going from savageness to civilization; thereby means to remove the age-long inertia in which our people have deeply stuck and have long been suffering. Some of us, no doubt, will never recognize the truth; none can help losers in the race of life. A man who obstinately sticks to his bullock cart and cannot adapt himself to the age of the autocar, sooner or later, has naturally to go out of the market. The world is run not by sentimental ideas, but by the principle of supply and demand. Motor-buses in Lahore are replacing tongas, throwing many out of employment. Many of us have been left behind, others have suffered, several races have

actually died out, and others have degenerated because of the inadequate equipment of mental faculties for the battle of life.

A man is known by his actions, and a discovery by its results. During the last seventy years Darwin has conquered the whole of the northern Europe including Russia, America and Canada, and now he is conquering Asia. The last changes in Turkey have been due to the influence of Darwin, and the recent rapid changes in India have marked the beginning of a new era—an era in which the importance of the Doctrine of Evolution and its application to life is increasingly recognized as a remedy to the evils of the present and a promise to the success of the future. It has also opened doors to the history of the past: the history of the world is the history of its evolutionary process. The doctrine of evolution changes the whole aspect of life, and India is now passing from the stage of sentimentality and emotional excess to that of reason.

Many others before Darwin had recognized that man was not created and had tried to overthrow the dogma of separate creation, Anaximander in the sixth century B C and Empedocles in the fifth century B C announced the principle of evolution in its essentials, the latter could conceive even of the survival of the fittest. Some writers of India have long been teaching that man has grown as wheat has grown, man appeared on this earth as lice appears on the skin. Early Church fathers say

Knobe, taught in the allegorical method of exegesis, and Gregory of Nyssa (331—396) and Saint Augustine (353—430) gave naturalistic interpretation of the Mosaic account of creation and expressed belief in the creation by evolution under the direction of a divine power. The popular Spanish theologian Suarez (1548—1617) insisted upon a literal explanation of the Mosaic description of creation and vigorously fought for the success of special creation. But none before had expressed these facts and arguments in such a convincing manner as did Darwin so as to attract public attention.

There are now, says Brownell in *the New Universes*, three kinds of Christians—the fundamentalists who believe in the infallibility—the firmness, finality and perfection of the Scripture, the deity of Christ, the blood atonement and the second coming of Jesus—the institutionalists, who accept modernism and progress on the basis of Daniel's saying knowledge shall be increased and the experimentalists who, unfortunately, have no faith in revelation, they do not accept Christ as the Son of God or deity—they regard him as the greatest personality—the greatest genius ever born—who lifted mankind physically, socially, morally, mentally and spiritually by teaching higher standards of life expressed in the best manner and hence is the greatest benefactor of humanity—they respect him most, but do not worship him, they believe in God, and envisage Christianity as the best way of life and realize the usefulness of Church institution. Fortunately they

are the only people who have vision and courage, strength and character, wisdom and discretion, to mobilize forthright public opinion, lead a vigorous campaign—rather a crusade—against communism—the dreadful foe of all Christians.

It appears proper here to briefly state Darwin's theory of natural selection as an explanation of the origin of species and of organic evolution: everyday observed overproduction among all species of organisms with its consequent lack of the necessities of life for all is responsible for the keen competition or the struggle for existence—which struggle may be of the conflict of the tooth and claw, or of simple picking up of a worm, or of any other variety; through this struggle of millions of years individuals have developed differently and to different extent, as the result of their different personal experience and of separate environment of ages, three kinds of variations: the favorable, the harmful and the neutral, and the survival of the individual depends upon the sorting out of the harmful characteristics and the retaining of the useful as well as the neutral ones in continuing evolution.

Life originated in water as explained elsewhere. The tiny little cells floating apart began to form themselves into small colonies simply out of fear — which may be due to a blast of wind, chilliness, agitation of water, a flash of lightning, or rain. Naturally when the signal-danger was over, they would separate with caution; first, to satisfy their very nature of motion; and, then, in

search of their simple need of air and water. Thus originated our positive and negative tendencies. fear and caution, attraction and repulsion, isolation and cooperation, etc. It is beyond the author's ability and knowledge to recognize whether these tiny cells were of the same kind, though he is tempted to say that they had probably the same physical appearance differing slightly from one another in the possession of intrinsic energy. This irregular collection of cells in the remotest epoch of our history was our simplest form of organization. In the course of time this simple colony became permanent in obedience to the law of co-operation, continually undergoing the process of building up and breaking down of cells, and increased in size to a certain extent (evolution) beyond which it could not grow. Then occurred in the colony a sudden instinctive change (mutation) resulting in the definite arrangement of irregular combination of cells. Thus originated our first multi-celled organism of an elongated form and of a skin made of one layer of cells. It took its elongated shape because it could escape better in that manner the original causes of fear, and, secondly, in the tug of war the strength of the team is better applied if the rope be arranged lengthwise. The anus is of much later development. It would take its food and eject its impurities (excreta) through the same hole, our primitive mouth, by the process of extension and contraction of cells. This co-operative spirit of cells is its soul which does not differ from ours in kind but in the degree of its development. It

is self-evident that all the colonies could not undergo change because they did not possess the same degree of co-operative spirit and the same amount of intrinsic energy. It has been observed that *emotional energy is creative energy*. Thus higher and higher organism arose. An organization on the whole has advanced through evolution and mutation as a matter of necessity in the struggle for existence, environment acting as a mere stimulant. In the great kingdom of vertebrate it has culminated in man. In fact, our body is a large and complex organization of different organs working together for the common weal under the direction of branch offices situated in the head. Day after day, human society is organizing immediately after the fashion of our body organization and, therefore, in advanced countries the chances for individual efforts are fast decreasing. The day is not far off when the wages or comforts or requirements of life would be in proportion to the value of one's services to society, not through sentimentality but through organization. In nature different species have progressed to a definite stage and in the absence of new experience stopped to advance thereafter because none of them was capable of undergoing further mutation; the harmless have escaped death because of other's developed sense of pity. In simple language man has reached this high position of manhood through intellectual imitation and there is a limitless possibility to his continued development of the brain and mental faculties—the development of the brain does not consist in so much in its size or



all, all our controversies end into practical life—life as it is. He is sure that there were cases of cannibalism in the days of Vikramajit. His clever tricks with the Dryans (witches) and Sadhus were used to deal with cannibalism. He is not sure if India is absolutely free even now from it. Personally he is inclined to think that the Sadhus wearing a garland of bones (human) round their necks, faces covered with ashes and eyes made blood red, occasionally steal a small child and make a meal of it. This is an important point for investigation. There are the savages who are absolutely naked and run after their prey like wild beasts with rods or clubs—the simplest of weapons of offence or of defence—in their hands, with tangled hair and distrustful expression. They are cruel in nature, have no government and possess practically no developed arts. They delight in torturing their enemies, offer up human or animal sacrifices, practise sorcery, have no manners, treat their wives as slaves, and are caught up in the grossest of superstitions. Intemperance is no reproach with them, polygamy is usually practised, and unnatural crimes prevail to an astonishing degree. The Northern American Indians leave their feeble comrades to perish on the plains, while we serve and nourish them. The difficulty of obtaining subsistence compel them to wander and many of their infants die in the struggle. They are liable to many accidents on land and water in their search for food, and many of them are killed by the large beasts of prey. Even

are the Hindus who bathe in and drink the dirty and foul water of the Ganges, worship stones, ask help from the tombs and trees, plaster their litchens with cow dung which is more plainly the faeces of a cow sometimes absurdly forwarding arguments in its favour as a disinfectant. The housing conditions of an average Indian are unhygienic, quite a number of family members are huddled together in a single room their clothing dirty and insufficient food unwholesome, lavatory accommodation unacceptable. I have heard from a reliable source that seventy five per cent of Hindus suffer from some sort of stomach trouble. Decidedly the cause of the trouble is food made unsuitable by the advance of time. Sometimes a man feels ashamed and humiliated at the exposure of private parts of a woman from the flying off a dhoti or from carelessness. A lower form of religion, which has undergone neither reform nor adaptation forces upon its members stereotyped obligations which obstruct free thinking and stunts the growth of mind. A high percentage of Hindus sell their daughters and in one way or the other betray their own land, relations or non relations. It was sufficient and shocking to know that Gokhale betrayed Tilak. It may be a wrong information. Many a Hindu exploits the psychology of their would be son in laws by some sort of temptation without any remorse, and insists thereupon. Obstinacy is either the outcome of undeveloped brain or craftiness, the obstinacy of children is well known. In India the writer has noticed

—the smell of cow dung and urine clogging up the nostrils practise infanticide, and are subject to famine and other epidemics which take care of their surplus population. An average Indian is careless, wasteful, sedentary and unambitious, and breeds like lower animals with no sense of responsibility. While the people of advanced nations are frugal, foresaving, self-respecting and ambitious. They are serious and well-disciplined in their intelligence, struggle manfully and marry late. India is a land of plagues. Hindu bulls at the Benares Hindu University are respectfully allowed to have the fullest enjoyment of life. The stray dogs, the beggars, the maimed, the feeble, the idiots, and the imbeciles are allowed to breed and they multiply like rabbits. The limitation of inferior individuals is by all means an important step towards success. The idiots bear idiots and the imbeciles reproduce imbeciles. But in India the beggars beg with their children hanging round them and robust ones with great pride. Some of the Brahmans beg money to marry their daughters off. Nature does not offer any other example of such a democracy. With the advent of the English and the consequent growth in sanitary conditions and advantage of the advanced knowledge of medicine there has been increase of population by about ten crores, which is in proportionately large in comparison with the artificial increase in the supply of food. It was interesting to know that a Hindu widow, whenever she gets pregnant, bears a child and throws

foundation of democracy—all are brothers. He was really a great prophet when he preached men not to live parasitic lives by charging high interest on money which is a destructive business and not a constructive one. In other words he was teaching the law of co-operation. He was really a great prophet when he taught the importance of the law of equilibrium—balanced food, middle course between slow and fast, retaliation and forbearance, heresy and idol worship, love and hate etc., come under this heading. He taught the importance of prayers which act as a brake on our actions and strengthen our mind. But he was unusually elastic and did not believe in enforcing them upon everybody. He was really a prophet when he prevented Sadhuism which is the policy of the defeated—a Brahman who prays for eight hours to become the Maharaja of Patiala in his next birth does not bear his share of responsibility and construction but is merely a burden on society. He courageously pointed out the evils existing in the institution of priesthood. He was really great when he taught the law of slow growth—the savage, moral and spiritual state of mind are three progressive stages of man. Briefly the clear cut faith and the democratic institutions of the prophet are decidedly superior to aristocratic and superstitious Hinduism.

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erect position, yet he still resembles apes in the possession of no less than seven of his muscles, revealing his descent from some semi human progenitors in an unmistakable manner.

The Orang and the Chimpanzee build platforms on which they sleep decidedly, an act of reasoning. They teach their young ones to avoid eating many of the poisonous fruits. An American monkey had been seen carefully driving away flies which plagued her infant and a Holy-bates washing the faces of her young ones in a stream. Orphan monkeys are regularly adopted and carefully guarded by other monkeys. The writer has noticed other monkeys come to the rescue of a young one at the call of help when it was being robbed of its eatables by a big one, undoubtedly, an act of high degree of sympathy. A baboon who had adopted a kitten, at being scratched, immediately examined the kitten's feet and without giving any pain bit off the claws. At Hurdwar he was looking at a monkey who began to growl at him because either he got suspicious or sensitive. He turned away his face, he learnt silence. A baboon is said to have prepared mud and threw it at his enemy and then laughed. A Bengal baboon spreads out his hand to take a piece of sugar cane with the face of an old wise man. His deeply sunken eyes and man like features fairly reveal the development of his brain. Monkeys feel wonder and curiosity, the experiment with a mirror is interesting. Monkeys cry out at the sight of a snake. A snake held by monkeys was noticed

believe in practical Christianity—the religion of action or practice, and not of talk

Turning now to another question, the degree of resemblance of man to his nearest allies—the apes, let us trace our further line of descent. The anthropomorphous apes, namely, the Gorilla, Chimpanzee, Orang, and Hylobates agree with man not only in the absence of tail, the possession of similar dentition and the structure of nostrils, the similarity in the relative position of the features, and briefly in general appearance, but also in many characters which man possesses in common with the whole group of the Old World Monkeys. The ears of the Chimpanzee and Orang are curiously like those of man. The scattered and sufficiently long hair of the eyebrows of the former rising from the naked skin above the eyes furly corresponds to that of ours. The brain of the orang is known to resemble that of man in every chief feature and fold. The hands of the apes are constructed on the same general model but are far less equally adapted for diversified uses. The chimpanzee and orang have been seen walk on the outer margins of their palms. They climb trees with admirable quickness of course, with the help of their long feet resembling grasping hooks. It is interesting to note that some savages use their feet, which have not altogether lost their prehensile power in climbing trees and in many other similar ways. No doubt, since the remote period, man has changed wonderfully because of the great development of the brain and his

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by a passer-by, who wrote this story monkeys held it all along its length Whenever it tried to move they pulled it back After a while a brave monkey appeared on the scene, jumped at the snake and grasped it. At it the other monkeys began to chatter He held it tight till the snake fell dead All monkeys including baboons break open pea nuts and chagozas with the help of their hands and teeth The tailless, dog faced monkey breaks them open with wonderful cleanliness The author threw a piece of orange to a female monkey She caught it as cleverly as a good cricketer catches a ball All monkeys including baboons extract juice from a piece of a sugar cane handling it in the same way as a man does But a dog faced monkey does it far more cleanly A wild chimpanzee cracks a native fruit resembling a walnut with a stone, and learns to break open hard nuts and use a stick as a lever Monkeys when separated feel miserable When baboons plunder a garden they silently follow their leader If an imprudent young animal makes a noise, he is slapped by others and taught silence and obedience Monkeys post sentinels, and utter cries expressive both of danger and safety Baboons turn over big stones to find insects and share their booty A chimpanzee attacks by throwing any object—the simplest tool of offence and defence—it can catch, at a person who offends him The orang is said to cover and warm himself at night with the leaves of a tree, the crust of blankets, and a baboon was noticed by Brahms to protect

himself from the heat of the sun by holding a straw mat over his head—the primitive umbrella. Thus we see in the practice of these habits the first steps taken by our ape like progenitors towards the development of our arts and social virtues.

Regarding the social and mental activities of lower animals and birds, we learn from daily human experience that they also show, like men and apes, acts of wisdom and feeling expressive of pleasure and pain, happiness and misery and other emotions. Many animals serve and help each other. The horses show their sympathy by nibbling and cows by licking each other on any spot which itches. Indian crows have been seen feeding their old and blind companions. The sheep feel miserable at the separation of their friends and show strong mutual affection on their reunion. A pair of loving tigers has been noticed to growl and despair at their separation and grew sick by long separation. When united they regained their health and began to enjoy their fullest robustness of life. Examples of maternal affection of animals are of daily occurrence. Wolves co-operate in attacking their victims. Dogs obey their masters and command themselves by refraining from stealing food. The present writer noticed a dog rubbing its back parts, once against grass and second time against loose sand, with the object of cleaning itself—an act of wisdom. Some of the peacocks when separated from their male companions remain widow for the rest

of their lives. A beaver builds its canal, a bird its nest and a spider its wonderful web. Monkeys imitate, parrots memorize, and elephants retaliate upon their enemies and punish their keepers who steal their food. Hawks teach their young ones the art of hunting and catching by dropping dead mice and sparrows in the air. Golden eagles, on the smell of danger, hover up and allowing their tiny youngsters to settle on their backs fly away. Seals post sentinels to warn them of danger. Crocodiles are said to cover themselves with mud and slip away cunningly to the place where monkeys frequently gather, and strike them dead when within the reach of their tails — wonderful specimens of cunningness. A hound when afraid of losing one of its victims deliberately kills it with a crunch or leaves the dead one behind to take it again. Cows begin to tremble at the sign of hard beating, and show their anger on suspicion by their red eyes. Bulls are jealous and fight out their rivals. The faithfulness of a dog, the bite of a snake out of fear, the cunningness practised by mice in avoiding extirpation, no body misses. The bad or good temperament of horses is noticed every day. Intellectual faculties gradually developed from instinct, and instincts are formed by the long repetition of habits and habits from the continuous reoccurrence of tendencies — a sparrow among many caught in a dark room and harassed by this imprisonment flutters back and forth from one end of the room to the other and on incidently

coming across a beam of light from a hole changes its course and passes out of it, others follow suit—next time it easily repeats the process and thus adds a new tendency to its system by the incident or the experiment. Animals and birds feel wonder and curiosity, and possess the same faculties of imitation, attention, deliberation, choice, memory, imagination, the association of ideas and reason. Of course, the social tendencies and mental faculties of animals and birds in comparison with man are not developed to the same degree of progress and refinement. Individuals of the same species differ in the development of their faculties from imbecility to high excellence.

Apes are also liable to many of the same diseases such as consumption, inflammation of the bowels, eyesore etc as we are. They are attacked by closely allied parasites and are similarly affected by medicine, revealing a close agreement of muscles in their minute structures and chemical composition. Many kinds of monkeys enjoy tea and coffee and are similarly influenced by spirituous liquors, showing the similarity of nerves of tastes and the similar effect of strong liquors upon their nervous system.

It was only a few days ago that the writer went to Hardwar for a little trip, and there he carefully observed the behaviour of some of the monkeys. They belong to the class of *Haplorhines*. Their white faces, blue eyes, and sleek hair are those of an Englishman; their hollow cheeks are those of us, their simple mindedness those of Americans.

which innocence is not due to the lack of intelligence but is the product of an advanced state of civilization. The external ears are closely adjoined. They sit with their hands on their knees as we do and drink milk from a glass holding it with both hands. They fill their hand with parched grains in the same manner, and, when scattered pick them up singly and eat them quickly using both hands while sitting on their feet on which they turn round in peculiarly Indian fashion, when need be, without the help of their hands. They seize thin branches and insects in the same manner and break open hard fruits with stones. They pull out thorns and hunt for each other's parasites. They roll down stones at their enemies though they are awkward in these various actions. Once he called a big monkey and showed him a boiled potato. He came at once. He was feeding him slowly and he wanted to be fed fast. He muttered and ran away. The present writer called him out again. He came and the author threw him the rest of the potato. Later on it was discovered that he was in a hurry because a female monkey was waiting for him. On another occasion when he was reading he saw the big fellow enter his room watchfully but courageously. In spite of all his attempts to frighten him he went on with the unexpected patience of mind in the pursuit of his object he picked up or caught hold of his dhoti and ran away. The writer followed him simply to be astonished at his acuity and cleverness. At the same time his eyes turned on another monkey who had stolen the shirt of someone else

She tried to put it on, tore it when she could not succeed and wrapped it round her body. It at once reflected on him: the monkey possesses developed sense of imitation, and practically every man learns through imitation, whether by seeing or by reading any printed matter. A monkey steals a shoe for the same purpose and when its loser throws the other shoe at him, the monkey throws back the stolen one at him out of retaliation. Your humble servant is really sorry to weary the reader with these familiar occurrences. They were interesting to him; he thought they might be interesting to others. He heard from the son of a doctor relative of his that in the absence of one of his customers a monkey put on his spectacles and took up his book in its hands to read. On the return of the owner the monkey ran away breaking the glasses. The man returned the next day to buy a new pair. Some of the monkeys laugh and weep and express different emotions like us. With monkeys the cry of pain, the snarl of anger, the growl of rage, the yelp of despair, the cry for help resemble man's inarticulate cries aided by signs and gestures and the movements of the muscles of the face, which are his rude methods of expression. The graphic language of the Chinese originated from the desire to satisfy their sense of beauty by copying nature. Superior languages enriched with advanced knowledge spread widely and lead to the gradual extinction of other languages. *The better, the shorter, the easier forms*; stronger ideas are constantly replacing the weaker ones. It was at

Rishi Kesh that he watched a monkey jump at the smell, probably, at the sight of sweets held in one of the hanging corners of a sheet of a Hindu woman. She opened the knot in the twinkling of an eye while standing on her two feet and before the woman could turn her eyes to see what the matter was, the robber was away with her loot, leaving the woman utterly astonished. A little later, at the same spot he noticed another one stand on her two feet and look over two other monkeys who were sitting in front of her. Again he noticed at Hardwar another monkey running on her two feet with fair degree of quickness and at the same time turning her head on all sides, because she was afraid of being attacked by others whom she was fighting for some reason. It seems to him that a monkey learnt to stand on its two feet when stretching forth its hands to detach a fruit. He saw three monkeys fighting against one when the latter encroached upon their rights. So they fight against men. A male monkey does not snatch grains from his female, nor from his young ones though he does not give them from his own earnings. We then see in them a certain degree of development of sympathy which is less than man's. Of course the writer is not talking here of degenerated people. It is well known that a female monkey, sometimes in rage, throws her young one and when it is dead, weeps and cries at which other monkeys run to her help and finding the matter as it is, they beat the mother and go back in disgust, leaving the mother to keep her dear one in embrace. Savages when in rage

throw their children, though not so often, at the spot and after killing them become repentant. While the uncivilized or semi-civilized people beat their children hard and then shake their heads.

It has been recently asserted by some of the naturalists that negroes are descended from gorilla, the Mongols from orang and the Aryans from chimpanzee. In evidence of their arguments they forward the similarity of their respective colours, features of the face and the body, and the closer resemblance of their bodily and mental habits. The Eskimo, who has been living for centuries in Greenland entirely on animal food, closely resembles the Southern Chinese who is purely vegetarian and lives in the hot part of the country. Both of them have the same yellow colour. The brown Gorkha has not even slightly changed in his colour under the cold climatic influence during the long period of years. This shows the ineffectiveness of food and climate on the physical appearance of the body. The cranky hair of the negro, the soft smooth hair of the Aryan and the piercely strutting hair of the Mongol are fairly distinctive. The fangs of the wisdom-teeth of the Malayan races are inherited from orang. The fully developed canine teeth of the female gorilla in comparison with the less developed ones of the female orang shows the furious nature of the former. Labule rudiments of gorilla are sometimes found in the negro. The hairless face, chest and back of the Chinese and those of the negro indicate that orang



and gorilla originally inhabited some tropical countries while the beardless face, hairy chest, and sometimes the hair covered back of the Aryan point out the original home of the chimpanzee in some cold country. From these conspicuous characters the present writer has often been able to judge with a fair degree of accuracy the extent of blending of different races in India in different individuals. It might be interesting to notice that the system of writing of Aryans, the Chinese and the Semitic people is different.

The younger ones of monkeys when shedding the milk teeth often die of fever, in the case of savages their children suffer from fever but do not to the same number, in the case of Hindus or Indians quite a number of children die of the same cause while in the case of the English the number of deaths is only a few. The number of deaths in these different cases is different because of the degree of development of their mental faculties or their respective state of progress. The children of civilized peoples are brought up under better conditions of sanitation and health, are fed on better food, besides their stronger inheritance.

Again, the idiots occupy the lowest position in the scale of manhood. They quite resemble monkeys, rather some of them are lower than even monkeys. The brain of an idiot is far less developed than that of a normal man. He does not possess the power of speech and is a good imitator like a monkey. He is feeble in intelligence.

and other mental faculties, then is strong and active, continually gamboling and jumping about and making grimaces. They ascend stairs on all fours and are curiously fond of climbing trees—all boys like jang planga. They are filthy in habits like children or monkeys and have no sense of decency. They smell everything before they eat. Several of them are remarkably hairy. Most of us have seen the familiar figures of Doula la Chuhars at Railway stations, shrieking to beg. Some of the cunning fakirs have exploited the psychology of the simple minded and have succeeded in getting their male babies dedicated to them. While they are growing these fakirs arrest the full development of their brains by covering their heads with metallic cups and thus keep them idiots, who can be confidently exploited to beg for them for the rest of their lives and to a still more advantage for adding to their wealth because these Doula la Chuhars succeed better in easily exciting the pity of others. Such barbarities of the crudest nature and meanest kind are perpetuated in India, in the name of God and religion, in India the most religious and the most spiritual country in the world the land of Mahatmas Pandits fakirs Mullahs Yogis, and Siddhus. Sooner these titles and the denominations are done away with, the better it is for the people of India and the rest of the world.

At the lower level of the scale of progression are other monkeys. Some of them are graced with beards

whiskers, and moustache. The nose of the Hoolock is inclined to an aquiline curvature, and that of the *Semnopithecus* is ridiculously gone in the same direction. The latter has also long hair on head, and the Bonnet monkey possesses thick hair on the head which terminate abruptly, the extent of nakedness of the forehead differing in different individuals. An ape called the *Dryopithecus* of Lartet, nearly as large as a man closely allied to *Holobates* used to live in Europe, and died out sometimes in the dim past.

As soon as some apes became less arboreal because of a change in their manner of procuring food or to some change in the surrounding conditions, they adapted themselves to be bipedal. We see, in short, the existing monkeys occupying an intermediate position between that of a quadruped and a biped. Since then man has undergone wonderful modification both in body and mind while on his way to erect position and thereafter.

Man belongs to the class of mammals. All of them are constructed on the same general model, and do not only resemble in possessing similar bones, muscles, nerves, blood-vessels, and internal viscera, but also in their liability in common with man to be attacked by closely allied parasites and certain diseases from the lower animals and birds, and to communicate to them, proving the similarity of their tissues and blood both in minute structure and composition. His wounds are

required by the same process of healing. In all mammals the whole process of reproduction is strikingly the same.

It was some months ago when your servant was walking down the banks of the rivulet near Ludhiana that it occurred to him that the embryonic development of man is his history through the dim ages of the past, or rather it would represent the different phases of development through which man has passed from the remotest period, excluding, of course, the re-appearance of those characters known as reversion. So it is of other animals. It further occurred to him that the delivery of the child after nine months or a certain period might have some connection with our age through the ages and the period of delivery is different in different mammals and others. He does not know whether any light has been thrown by some eminent investigator in this particular branch of knowledge. As he has expressed before, too, that he is not a student of biology, and naturally the reader does not expect him to be in contact with the recent progress of natural history. Really speaking, he has not the facility, nor the opportunity, nor the means to avail himself of the current literature, and so he is extremely sorry to deprive the reader of the facts and arguments scientifically investigated and reasonably based, recently forwarded by a host of scientists in support of the Doctrine of Evolution. Only a little before writing this essay he bought for ten annas, "The Descent of Man" by Darwin, part I, published by Watt and Co.,

London The facts therein have vastly added to his stock of knowledge.

Man is developed from an ovule, one hundred twenty fifth of an inch in size (what about the soul), formed by the entrance of a spermatozoa into the ovum, the former has to swim across a distance in the liquid, the very nature of which shows that our first male and female, the ovum and spermatozoa in the dim obscurity of the past were aquatic animals The reproductive organs of the male and the female have practically even now the original shape and act in the same manner lubricated by an oily secretion These organs of mammals get into the same position as that of human beings when the former are made to stand on feet The ovule of man does not differ in any respect from the ovules of other animals Why? Because we have co-descended from some common progenitor The idea that a man in common with other animals sprang from the same parents would be monstrous to many and disgusting to others But we cannot ignore the hard facts of life and ignorance is more confident than knowledge He is afraid the greatest danger in India may arise from the failure of the people to recognize the intellect

During our long history of development from some lower form certain organs became rudimentary from long disuse These were possessed by some former progenitors in a perfect state, and have become rudimentary since long from the changed habits of life They are found in all

higher animals, or rather in all animals including man. Rudiments are not of any use to the individual, but they continue to appear even after their long disuse in variable degree of reduction, indicating the powerful force of heredity. Of course, in the long run they are suppressed. As a rule an organ becomes rudimentary through its extremely slow decrease of use. Rudiments of various muscles regularly present in some of the lower animals are occasionally found in man in a greatly reduced condition. The horse twitches its skin as much as we use the remnants of this muscle in raising the eye brows to express some sense of feeling. Many monkeys use their scalps up and down. The sense of smell, which was highly serviceable to some early progenitor as a guide to detect unhealthy atmosphere, to warn danger and to find a prey is inherited by man in an enfeebled and rudimentary condition. No doubt, the power of smelling is different in different individuals, the Chinese and the negroes possess it in a far higher degree than do the whites. The sanitary conditions in the countries of the whites are far better than those of the negroes and the Chinese. The vermiform appendage of the caecum is another rudiment left of the shortened part of a long one as the result of changed diet or habits. So are there many others. But the most interesting one is the existence of a rudimentary mammae in the males of all mammals including man. In several cases they have become well developed, and yielded a copious supply of milk, showing the extremely slow separation of

functions of a male and a female, which originated from one organism having both the sexes united in the same individual

Thus the comparative study of the different parts of the body of man and all other animals and their manner of development, the same early stages of embryological development, and the existence of rudimentary organs afford substantial and conclusive evidence in support of the doctrine of evolution. This belief is further strengthened by the aid of evidence derived from their affinities of both body and mind, their geographical distribution and geological succession.

There are many cases in which subnormally developed parts continue to grow, but do not attain to the full development of normal conditions and therefore are not capable of performing their full functions. These are the cases of under development. Persons who some way or the other have remained under-developed are defective, and your savant regrets to say that they are merely losers in the race of life. There is a possibility of their uplift in the organic scale through the sexual selection, but at the expense of the individual and the community. It seems to him that under development is due to the inherited incapacity or limited capacity of the individual for further development. All persons are not equally endowed nor richly gifted with equipment for the battle of life as certain as death. The development of various organs, some children wear spectacles because

of the weakness of the eyes ) instincts, different senses, social virtues, moral sense, and intellectual faculties is different in different individuals. An idiot is a natural arrest of brain development he represents the lower type of mankind, while Doela ka Chuha is an artificial case of under development or is purposely kept under developed. It is interesting to notice that in actions they closely resemble each other and there is not much difference between their unhealthy and inactive state of body and mind. Arrested growth is due to the lack of food. On the other hand there are certain cases in which occur the re appearance of certain long lost structures. For example, certain women have been known to possess abnormally double uterus fully grown to perform the proper functions of gestation. It is a retrograde of a simple arrest of embryonic development with its subsequent growth. It is a true case of reversion. Why do these cases of reversion occur? Probably reversion takes place because of the predominance of characters of negative kind. A hermaphrodite is a case of true reversion. What about impotency and barrenness? They differ in degree, but not in kind. Sodomy is a rudimentary instinct left and developed in the lower type of men from our early progenitors who possessed both male and female organs united in the same individual so that sometimes one of the individuals acted as a male and on another occasion the same one behaved as female. History traces a perpetual



struggle of dominance between sexes. So is the sense of polygamy. Some of the monkeys are sodomists. Some of the women have the disposition of dominating other women and use various means to keep them as their wives. Such women are not fully developed.

Now looking to man, we trace his history by means of the rudiments he still retains, by means of the re-appearance of characters through reversion and by the aid of science of morphology and embryology to find that our progenitors were once covered with hair and were provided with movable ears, beards and moustache are of later development. Since, then, the great artery and nerve of the humerus have changed their courses; the intestine has taken to a much shorter caecum; the foot has become far less prehensile, the last character is also confirmed by the conditions of the great toe in the foetus. Sometimes at this stage of life they learnt to walk on twos, may be due to the change of their method of obtaining food. The process might have been quickened when they had eatables in their hands and were pursued by their enemies. It was easier for them to walk on twos instead of on threes. The author saw a trained monkey, whom he offered a caltrop, eat with one of her hands while walking on her twos. She could fairly keep her pace for a while with her master. It must have taken place in almost a treeless tract of land. He wonders what would be the state of monkeys when they visited a country of bananas or sugar cane. The necessity

of walking on twos might have arisen from their need of storing food to a safe and distant place. They were arboreal in their habits and were possessed of great canine teeth which they mostly used to fight their rivals. At some earlier period the uterus was double the excreta was passed through a cloaca. At a remote period each individual had both the reproductive organs. With the further development of distinctive male and female characters the division between the two became wider resulting in the possession of double uterus by the female. In other words the male reproductory organ was through extremely slow process replaced by the uterus. Even to-day the division between the male and the female is not complete. Both of them possess the characters of male and female. In an average woman the female characters have become predominant. This fairly explains why certain women reveal more manly or male characters and some of them actually deceive their own sex by acting themselves as males or their husbands. At a still earlier period our progenitors were aquatic in their habits as explained elsewhere without the aid of morphological reason. 'The clefts on the neck in the embryo of man show where the branchiae once existed. In the lunar or weekly recurrent periods of some of our functions we apparently still retain traces of our primordial birthplace a shore washed by the tides. This change in our mode of living from the sea to the shore must have called for a high degree of adaptability on the part of the survivors

and brought in great changes in the structure of our body and mind. "At about this same early period, the true kidneys were replaced by the Carpoora Walffiana. The heart existed as a simple pulsating vessel; and the chorda dorsalis took the place of a vertebral column. These early ancestors of man thus seen in the dim recesses of time, must have been as simply, or even still more simply organized, than the lancelet or amphioxus. The lancelet carry us further back to the larva of existing Ascidians. The lancelet gave rise to the Ganoids and other fishes like the Lapidosiren. The birds<sup>2</sup> and raptiles were once intimately connected together, and the Monotremata now connect mammals with raptiles in a slight degree. In the class of mammals the steps are not difficult to conceive which led from the ancient Monotremata to the ancient Marsupials, and from those to the early progenitors of the placental mammals. A step further takes us to the Lemuridea who gave birth to Simidea. The Simidea then branched off into two great stems the New World and Old World Monkeys; and from the latter at a remote period man, the wonder and glory of the Universe, proceeded."

The occurrence of similar results in individuals is possible through the retention of analogous variations. The present writer has noticed some men closely resembling others not in any way related.

<sup>2</sup>Ants, being afraid of wetness or water, grow wings in the rainy season. Thus birds developed wings which are their "arms."

Thus we see, in the higher animals, memory, attention association, even some imagination and reason. Complex faculties such as the higher forms of abstraction and self consciousness have originated through the development and combination of simple ones. It is plain that practically the whole of living nature learns through experience, and there has been advancement to a certain degree beyond which intelligence has failed to keep on the progress of the species or the race, and under physical or intellectual domination the members begin to exercise habitually all their faculties to avoid extirpation—an act which has led to the development of cunningness. It is noticed that the harmless and the small ones have escaped death. The former by exciting the pity and being unoffending, though is liable to die in the end through the extremely slow process of gradual extinction, and the latter by escaping detection. Our habit of hiding expresses our primitive tendency of escaping detection. The individuals of the same species do differ in intellectual faculties from insanity to high excellence. There are the idiots there are the imbeciles. The fools and the stupid are at a lower state of intellectual development. The idiots are being left behind as monkeys were left behind in the race of life.

These intellectual faculties, which have led to the progress and advancement of mankind, are leading to rapid changes in our customs, fashions and systems. Man occupies the present pre eminent and dominating

position in the scale of organic life because of the development of his powers of observation, memory, curiosity, imagination and reason. Life consists of difficulties and they demand solutions. Briefly, his instruments of peace as well as of war, his ways of communication and transportation, the art of making fire, etc., are the results of his developed powers of intellect.

Motion and rest is the very nature of man. This very state of constant agitation and rest was the pre eminent occupation of practical guidance even of our earliest ancestors, as traced before, though on a much smaller scale. Even from the earliest period of our existence, the ancestors of man through the whole line of descent have been constantly subjected to change in their mode of living from water to earth and vice versa through tidal waves, the seasonal changes the diversified conditions of climate through the fear of their enemies, the storms in the form of heavy rainfalls accompanied by hails and lightning, deluges strong earthquakes, earth catastrophes, or hard pressed by the increase of population in search of food. The effect of the direct and definite actions of changed conditions has led to the development in man of an almost indefinite amount of fluctuating variability, by which the whole body organization has become more or less plastic. This degree of plasticity or power of adaptation to changing conditions, whether of body or of mind, is different in different individuals of the same race or species. No individuals of the same race or species are alike. Different

occupations lead to changed proportions in various parts of the body. For example, watch-makers are short-sighted and the blacksmiths are thick-armed. The fur of a seal, the thick layer of blubber of a whale, the clothes of a man and the erectile spines of a porcupine are the means developed by virtue of which they seek their protection. During his incessant migrations, when man spread widely over the face of the earth, he must have been exposed to the most diversified conditions. Only a part of the whole group would have succeeded in the adaptation to the new conditions of life; the weaker must have perished. The adaptation to a new food must have brought about certain modification in them. The remarkable changes of colour in the plumage of parrots when fed on certain fishes attracts attention.

All animals tend to increase beyond their means of subsistence, and so it must have been with the progenitors of man. Thus, occasionally, they must have been exposed to a struggle for existence and consequently to the elimination of the weak in accordance with the law of natural selection. The failure to obtain provision of food or economic struggle will lead to the degeneration or to the development of negative characters in the baser kind or the unfit. A snake is an embodiment of negative characters. Man is made of good and bad elements and there is a continuous struggle between these positive and negative forces—the opposites, or in the terms of Darwin there is a continuous struggle between his beneficial and injurious variations, the

beneficial on saving the survival of the fittest. A Sathya goes with a Sadhu, a thief helps a thief. In other words there is a continuous struggle between good and bad bloods and this is Darwinism. In this life there is no other relationship—Parthiv fought against his father, and Krishna against his uncle. Probably Darwin did not understand Darwinism otherwise he would not have propagated the principle of individuality, 'the survival of the fittest', at the expense of that of individuality in relation to society. With the progressive nations natural selection acts usually on the individual through the preservation of variations which are beneficial to the community. Such a nation is benefited by a high number of births of geniuses while an average man learns through the principle of imitation. In civilized nations the elimination of the weak is worked through advanced methods while some elimination of the worst type of man is always in progress. The execution, the confinement and long periods of imprisonment of the malefactors prevent the transmission of their bad characters. That mental aptitude quite as much the bodily structure have long been known to be inherited. Both the good and bad elements are transmitted to the children. Our tastes and habits, intelligence, courage, bad and good temper, even our instincts are certainly inherited and genius which implies a complex character evolved by the combination of higher faculties tends to be inherited. On the other hand insanity and deterioration of mental powers are likewise known to run in families. Recent investigation has proved

the occurrence of devolution brought about by degenerate factors. Therefore we cannot afford any longer to be mere on lookers'' in the game of evolution. We have to discover the moves by which man has been raised to his present dignity and apply them to life, thus improving and safeguarding the quality of our future generations.

It will not be out of place to say that the sweet strains poured forth by many a male or female, the decoration of the neck gracefully arching, the proportionately attractive features beautiful shading and forms which excite pleasure, graceful ways and manners, high tastes of culture, briefly, the ornaments of both the body and mind, have been developed to continue the flow of life

To recapitulate, man has descended from Apes whose ancestors were hairy, tailed quadruped, arboreal in habits, and inhabitants of the Old World Monkeys. "All evolutionists admit that the five great vertebrate classes, namely, mammals, birds, reptiles, amphibians, and fishes are descended from some one prototype, for they have much in common, especially, during their embryonic state. As this class of fishes is the most lowly organized and appeared before the others, we may conclude that all the members of the vertebrate kingdom are derived from some fish like animals. In the dim obscurity of the past we can see that the early progenitor of all the vertebrata must have been an aquatic animal, provided with branchiae with the two sexes united in the same individual, and



with the most important organs of the body (such as the brain and the heart) imperfectly or not at all developed. This animal seems to have been more like the larvae of the existing marine Ascidians than any other known form." So all animals and birds are branches of the same old tree; and this is truth.

Co-operation is the foundation-stone of all our morality, and this spirit is found more in civilized nations—Mohammadans co-operate more than the Hindus.

An average man learns through experience. Even at such a lower stage of life as that of a pike the individual learns through bitter experience. It has been observed through experiment that when a pike is left in one of the two compartments, filled with water, at the very sight of the fish in the other compartment separated by a glass plate it rushes at them, strikes hard against the plate and becomes stunned. Coming back to senses it rushes again against it and thus repeats the process several times. Thereupon it learns through experience that it cannot catch them. The experiment shows, first, that it recognizes fish through his senses of smell and vision, probably, aided by the senses of hearing and taste; secondly, that its power of memory and reason is at a very low degree of development, because after hard knocks it comes to remember that it cannot catch them. This way of learning has led to the gradual development of memory and the sharpening of eyes. While a monkey

opens thoughtlessly the lid of a small box containing a wasp, and when stung tries it second time but cautiously and avoids being stung. The writer has seen a trained monkey not only dancing and performing other wonderful feats, but have seen her lift a douroo (a small drum) and hand it over to her master who left it behind and forgot to take it. It shows that the development of mental faculties is different in different animals, only in degree but not in kind. An ant when lifted on a finger and then let it drop on the floor does not get up on it again. It learns through experience. They have been known to communicate information, to recognise their fellow ants after months of absence, and feel sympathy for each other. They build edifices, clean them, close the doors at night, and post guards. They have been known to make roads as well as tunnels under rivers and temporary bridges over them by clinging together. They collect food for the community and store up seeds which they do not allow to germinate by carrying it out, if necessary to the surface to dry. They enlarge the door, which they afterwards build up, if too large an object is brought to the place. They keep insects as milch cows. They fight out their enemies and make slaves of them. They go out to battle in regular bands, and freely give up their lives for the common good. They also emigrate but according to the preconcerted plan. They wisely watch their eggs as well as those of their milch cows by moving them into warm parts of the nest. The white ants damage

much property every year, and they have till now escaped subjugation at the hands of man. Turning to the point again an average man learns through hard knocks of life. Practically, every man learns through imitation, whether learning by seeing others or through books, it is imitation. But there are men like Henry Ford and Edison in whose opinion only fools learn through experience; because such persons can visualize the unknown forces of life. These are the type of men who by virtue of their intellectual originality have been raising the level of civilization which, in turn, requires higher mental development of the power of understanding. The science of mathematics requires more power of understanding than history. With the rise of the standard of civilization some fail to bear the strain; while others survive. Such is life.

Thus, these facts take us back to the unknown period of the origin of life—long after the origin of the globe—millions and millions years ago, a period so remote when this earth, a huge mass of flaming liquid, dashing through lifeless and void space, and then through the great masses of chaotic matter revolving at dazzling speed, on and on aimlessly, covered by dense clouds of steam with continual downpours of raining water, ages after ages, disorganized and lost in space without end, assumed a definite shape and occupied its present position. This was the beginning—the dawn. From then onwards through ages, for

millions of years, a gradual struggle for existence, until the tiny unicelled organisms were superseded through fishes and sea animals, land animals and birds with the advance of sturdier creatures of the animal kingdom which culminated in man

It was thus through his intellectual efforts that man discovered new paths of glory, reached new avenues of life, and attained to these heights of splendour in the scale of civilization—man, the glory of this earth

It seems to the author that the same forces of life are working in man as well as in plants. Plants can be classified into the same four divisions in which man has been divided as explained elsewhere. The milky juice of the *calatropis procera* is its nourishing stream. A dried tree compares fairly with a skeleton. A bark with a skin. A knot with a joint. Creepers with creepers. Plants are subjected to a number of diseases as are men. A child is hanging in the womb of the mother and is nourished in the same way as a fruit on the tree, but with the only difference that one is within and the other is without. Why? The former evolved under water, and the latter out in the open air. Rare plants have been noticed to have forms with human faces. They have come to this stage by tracing the same lines of evolution. Why do s then man wall and plants do not? Man walls because he started his life in water which is movable, while plants grew on earth which is solid.

## IX. THE ONLY MEANS

Individual's history is the history of the difficulties he encounters. If he overcomes those difficulties he is successful. The penalty of failure is either death or degradation. So of nations. Hinduism, Christianity, Mohammadanism, the Eastern or the Western civilization are nothing but different explanations of life given by original minds, born in different countries and influenced by different environment. Whether it may be the author of Gita who tries to prove that soul exists after death, or they may be the authors of Upanishads who seek harmony between the physical and the spiritual forces, or they may be the authors of Yogas who after long meditation come to the conclusion that this world is Maya, that is, the shadow of reality, were all free thinkers. During the last seventy years Darwin has changed the whole surface of Europe. Now comes Sir J C Bose with as much synthetic mind as that of Darwin, attracting for the first time the attention of the Western scientists by giving eyes to the blind wireless and again through his epoch making discoveries as a plant physiologist comes to the conclusion that life came out of non life. The study of environment in which we are born to better conditions for the human life to survive is materialism. Thus arises the

importance of all kinds of laboratories to solve our difficulties. Realizing the conditions in India on his return from America several years ago, the author predicted the future destiny of our people referring particularly to Hindus before several well known men. Only a year before last Christmas Sir J. C. Bose in his Convocation address at the University of Allahabad remarked "There is a general weakness in the life of our people. If the remedy is not found, the result is inevitable. The destiny of the human race is not led by religious superstitions, nor by sentimentality, but by the dynamic forces of life. Those who understand these forces, they live; those who blindly follow them, they merely exist, and those who can neither understand nor follow die out. Such is life."

The success of any nation depends upon the production of leaders who can understand and visualize the forces which govern life. From his personal experience in this country, the present writer can say with certainty that the habits even of our leaders are those of primitive type for practice of self-sufficiency is common among them. While life in the beginning was governed by one principle it may be called the law of self-sufficiency, Independence or the law of monopoly, or that of selfishness. Later on in the march of evolution, the separation of one organism having both the reproductive organs into male and female resulted in the introduction of two more laws which govern the destiny of the whole human race.

the division of labour and the law of sacrifice. Whenever there is a perfect equilibrium between love and hate, the resultant force is sweetness. It may be an example illustrating the law of harmony. The law of replacement is working, whether in the human mind or without it. The stronger ideas will replace the weaker ones. This is the law of struggle. And what is religion after all? It is nothing but obedience to the laws of Nature. Those who do not act according to them are irreligious, and irreligious people have been called sinners. "The wages of sin is either death or degradation."

India is stagnant, particularly Hindus; while life consists in movement. In reality, all our institutions are of slavish nature, established by the defeated people.

Our religion which may be defined as obedience to the laws of Nature is the result of our convictions subject to change on realization of further information and of hard knocks of life. To illustrate, a man goes up a tower, say two thousand feet high, repeats the name of God two hundred million times before he jumps over to convince the people of His existence. God is not going to help him; he is sure to kill himself, because he is going against the Law of Gravity—he is irreligious. Again, there was a Negro priest in America. One Sunday, immediately after his stepping out of the church wherein he spoke on 'The

Resistance of Evil and the Nature of Good 'His holiness fell dead under lightning—his God was dead The well known Swami has taken the desire in man of doing good to others or the existence of the very spirit of sacrifice as a proof for the existence of God Life is a continuous struggle for existence In the process of evolution, man lost the power of moving his ears (Hath Yoga) when he learnt to walk on his twos While the donkey or the horse still possesses it, because it cannot scratch its ears with its forefeet Any student of science places a little dirty water under the microscope and notices an amoeba, a one celled organism, doing everything itself—it eats, drinks, and above all reproduces itself So life in the beginning was governed by one principle it may be called the law of self sufficiency. Even in the higher stage of evolution wherein different parts have organized to work in harmony for the common good, that is, in the case of multi celled organisms having both the reproductive organs at ends, life is still governed by one principle the law of Independence The separation of one organism having both the reproductive organs into male and female took place out of necessity—life is a continuous struggle for existence It resulted in the introduction of two more laws the division of labour and the law of sacrifice The aim of any religion is to uplift humanity, its function is to create fair competition, honest and happy life An Englishman for example, was one night walking down one of the streets of London and he noticed



a woman at one of the corners, hinting and tempting  
 'Nance as the index of man Judging from her lovely  
 form and innocent looks, he asked her why she reduced  
 herself to such a profession She could not get employ-  
 ment and her sister was seriously ill was the answer  
 Moved by her sincere motives, he asked her to take him  
 to her house, and there he sent for a physician, paid  
 for the medicines, and got her cured Afterwards, he  
 married the girl he met at the corner He was decidedly  
 religious Again, an American forgave his wife upon the  
 confession of her blunder she ran away with his defeated  
 rival when he was working unusually hard in the hope of  
 getting an handsome reward as the result of his invention  
 to provide full comforts of life to his family The test  
 of love is forgiveness But these injunctions are not meant  
 for the irreformable Chastity is born out of love, and  
 our marriage system is not based upon love Our people  
 wait and wait for perfection, and there is no perfection  
 Mohammad was decidedly religious when he married a  
 widow He wanted to liberate women from the state of  
 slavery That is why he granted property rights to women—  
 one reduces a woman to slavery and she becomes a plague  
 Poisoning away a girl is not religious -to root out evil divorce  
 is the remedy I was constantly reminded of the remark  
 by Johnson, "Patriotism is the last refuge of a scoundrel,"  
 upon noticing a Khaddar suit on a fellow worker who  
 used it merely to please the tendency of his master, a  
 well known nationalist The unusual emphasis upon  
 Khaddar provides a chance for a cheat to exploit—why

not Swedashi, while the Western manufacturers are producing artificial silk. At least a khaddar suit should not be regarded as a test of one's honesty and nationalism. Is not Bhagat Singh a patriot? He may be misguided or misled but that is a different matter. But he wears a hat and a suit. The author knows a well known Bhagat in his own city he gets up early in the morning, takes his bath, repeats his prayers for several hours so loudly that he does not allow his neighbours to sleep but his wife sells wine and he himself what not—and these things to a man with some power of observation are of daily occurrence. The greatest benefactors of humanity are Krishna, Budha, Christ and Mohammad. They did not give the same answer to the origin of this globe, and its later development. Krishna wholeheartedly taught the law of karma. No student of science is going to approach the very acceptance of it. The author would not be so rude as to name it. Of course, the law of karma by Newton has stood the test of time, every action has a reaction. The experience of Budha at the end of his life can be summarized thus after death, nothing survives but the results of our bodily and mental actions—our children are the result of our bodily actions, our thoughts the result of our mental actions. Letting the stray dogs run in the streets, the flies to carry diseases, the mosquitoes to breed etc, or briefly, the principle of killing of anything is the greatest sin in general is out of date. Anything which builds up and maintains the body to

continue work is permissible; it means laxity of food. The Mosaic idea of the creation of the world in seven days cannot be accepted in its literal sense by any geologist. In 1925 a geologist testified that the crust of the earth is at least 10000000 years old, and man has been walking on earth for 400000 years. The idea of rising of the dead on the day of judgment came, most probably, from the story of a deluge, may be Noah's. The custom of burying the dead among the Christian nations is probably due to this explanation. Man being a rational being wants to give some explanation to natural phenomena. The man who first noticed the rush of fire coming out in some volcanic region, being unable to think right, thought it to be due to some superhuman agency. Thus came the temple of goddess. He failed to observe that the red glare accompanied by a stream of smoke and a tremendous amount of molten earth or lava indicate the molten condition of the interior portion of our globe; the fact leads one to logically conclude that this globe was once a molten mass. Really, our earth at one time was made of only one gigantic mass of land and one huge body of water. Due to unbalanced powerful forces, both interior and exterior, the original single continent broke up into several ones, which slowly drifted apart. A look at the world's map will show that if all the continents are put together, they absolutely fit into one mass. Several catastrophes took place in the process of evolving, and our globe took much time in settling to a state of equilibrium.

brum Several deluges are mentioned in the Puranas. In fact, our earth is still battling hard under strain and constantly undergoing change. Human life—in fact, all organic life—depends upon the existence of a large number of delicate adjustments of powerful, physical forces in the unknown interior of the earth. “So ye unto others as ye would wish to be done by” is an original idea of Christ, but certainly the same law was taught several centuries ago by Confucius. He doubts very much if many understand it even now. Ten millions of people became victims of fanatical religious hatred during the papal domination, some of them were well known scientists trying to establish the freedom of thought through research. Shameful and horrible deeds were committed “in the name of God,” and people are kept in ignorance, poverty and superstitions through the irrational fear of God. The custom of drinking cow’s urine by Hindu women at the birth of a child is due to the influence of pandits. But fortunately creative energy has been surviving. That is why Mohammad abolished the institute of priesthood. He must have noticed the exploitation of the simple-minded folks in Catholic churches by showing the blood of Christ (some red liquid). Awful deceptions are practised in Hindu temples, dancing girls in some of them are not short of prostitutes. Great as was Mohammad he permitted marriages among cousins which is against the law of genetics. The idea of burying the dead was not interfered with. Jews like Mohammadans do not eat pork. This idea was most

probably borrowed from the Jew prophets as much as the custom of circumcising which indicates the existence of the objectionable disease in those days That being the best precedented precaution against the resultant punishment and the spread of the disease Change is the law of progress, as poverty or stagnancy is the result of poor thinking

India is stagnant, particularly Hindus, while life consists in movement. Our stagnancy is mostly due to our social institutions which are of slavish nature established by the defeated people partly due to the shade of a great banyan tree underneath which nothing grows Life consists of difficulties, and they demand solutions Our problem is to seek unity in diversity Any special form of constitution whether it may be socialist or republican, aristocratic or democratic, Dominion Status or Independence, is a subordinate question in comparison with the supreme question Is India going to be ruled by the irrational formulae of faith and priestly despotism, or ruled by the rational laws and civic rights? In comparison with scientific progress and its application our sense of justice, our marriage laws, our sense of honour, our system of education, and our entire social and moral organization are in a state of primitive character What India needs is to adapt herself to the dynamic forces of evolution That is the Only Means

## X. AN APOLOGY FOR A SCIENTIST

I was standing in the midst of a mass of a people the beggar, the sadhu, the pandit, the clerk, the young and the old, the master and the servant, the idol worshipper and the vagabond—a democratic combination, all considering themselves equally important in the matter of discussion. The pandit accosting me, "Sav, Raj! You do not pray you do not care for Shastras—you seem to be a thorough bred agnostic." "Panditji, you merely accuse me of agnosticism. Of course, you do not understand me your idea of God and your concept of religion are those of superstition, while those of mine are of knowledge—to you this idol you worship is God to me it is simply a carved and chiselled stone, and its worship—so called religion—a superstition. As to prayer I believe in it, but with me it is brief and short, and in my own room because I know many a person exploits others by hypocritical praying and misuse the name of God and His institutions for their selfishness and I am also aware of the use of prayer as a means of strengthening mind motivated by the desire of doing a good and heroic deed."

"The day is not far off when people would realize the importance of putting prayer into practice by action the theory of prayer is reinforced by constructive thinking, and deed completes the process. Prayer to me seems to be one of the so many instincts which we commonly inherit, and constructive thinking is decidedly a healthier pursuit. Will not the French scientists who are trying to remove blindness from this earth be wasting time if

they spend it wholly in praying? These constructive thinkers depend upon their own energy, their own power of endurance and of industry while a superstitious believer selfishly begs from God, and a beggar is a beggar. God helps those who help themselves. I was disappointed of one of my customers' fortune when I found him waste a lot of time in praying and in worshipping, I could only expect him to go from bad to worse, and he is losing. You probably remember the story of Agib in the Arabian Nights. He was told to embark with the brazen man, work silently and was forbidden to pronounce the name of God. On nearing shore he was overjoyed at the idea of his success of escape and in shouting out the name of God he capsized the boat, he did not realize that God helps those who help themselves. With it went down the vessel into the sea. Whenever sentimental factors come in, someone suffers. Again, Aristotle was a constructive thinker. His statement of four kinds of causes, though also mentioned in the Nayava, and a number of new ideas which occurred to him convince an intelligent person of his powerful mental faculties. Aristotle happened to state that if two balls of the same size but of different weights or of different materials were allowed to fall from a height, the heavier one would fall sooner. His statement ruled for two thousand years. During this long span of time no brain born was so equipped as to detect the mistake. Galileo in about 1546 found it out. Both of them were constructive thinkers.

So were Alexander and Napoleon. So was Darwin. Edison and Henry Ford belong to the same class.'

'Even the greatest personalities differed and made mistakes. Krishna wholeheartedly taught the law of Karma. No student of science is going to approach the very acceptance of it; I would not be so rude as to name it. Great as was Mohammad, he permitted marriages among cousins which is against the law of genetics. From these we conclude that they were human beings, though of the highest type. Again, the greatest personalities born in this world have been Krishna, Budha, Christ and Mohammad. They are the greatest benefactors of humanity, because they benefitted the world through their brains. So I equally respect all of them. Even they differed in their ideas. Krishna believed in the law of Karma. None of the remaining three did. Krishna believed in the existence of soul. So did Christ and Mohammad. But Budha did not believe in it. He only emphasized upon 'right living, right thinking, right acting and right doing.' The idea that a man dies as a pitcher breaks never to be built up again of the same material—water goes into water, matter into matter, energy into energy—has been of interest. Why did they differ? When such personalities have not been able to decide upon the matter of soul, how can we ?'

'I know a religious man: he used to see Krishna at night. He succeeded with his trick for a while. But in the end he died in a broken car unattended by anyone. One of my relative's wife used to talk of her husband's



spiritual powers, and he was discovered to be a thief of religious funds, a scoundrel who made money also by incest. I was told in a holy place of a holy man who reads Quran and prays for most of the time, that he meets Allah-Mian. His nose was eaten up by worms, and it was once humorously remarked "God must have, when in angry mood, struck His tail at it." The well known rascal pandit got revelation in 1929.'

'The establishment of the standard that the learner is greater than the creator; that the imitator is greater than the originator, that moral excellence is above intellectual excellence has been one of the greatest factors which has hindered the progress of mankind.'

'Regarding the idea of God and soul I do not know how the idea of God originated, probably it sprang from the idea of king's relation to his kingdom. No animal, including the ape, has any idea of them. The primitive man and the wild Africans were Godless. There have been pagans, and once the whole world was pagan. The saints and prophets of the old Testament struggled hard for convincing the pagan world of the existence of God. Concerning the idea of soul, I think, it came from dream. About four years ago, when sleeping, I saw my mother, in her happiest mood and in her best dress, stand on the head side of my bed, beckoning me to see towards the east. I suddenly woke up and saw around to find nothing. The idea of the origin of soul came from dream struck forcibly upon me. Darwin gave the same explanation. We

know with certainty that when a friend dreams of another friend the second one does not dream of him, because a dream is not the result of the meeting of their souls. It is associated with one's faculty of memory and imagination. And the idea of heaven originated, probably, from the find of some beautiful island which abounded in verdure, delicious fruits, sparkling water, fragrant air, shady trees, and other delicacies and melodies of life. The believer desires and thus prays to get heaven, while an evolutionist attempts to make this world a heaven or to establish the Kingdom of heaven through his efforts and intelligence. 'To us happiness in life.' Most of the people are the victims of traditions which may be defined as certain out of date beliefs put into practice for a long time. So are you?

'If the law of evolution be true—true as it is—and man comes from animal kingdom, the idea of God is man's own creation and is the result of his realization. Did you ever see the animals pray?'

'Regarding the Shastras, to me it seems, knowledge can be safely divided into two classes the known and the unknown, or rather, the discovered and the undiscovered. The discovered knowledge deals with the past and the undiscovered concerns the present and the future. The former includes our Shastras and the Quran—all religious books, scientific books, books and printed matter on all different subjects. So our Shastras form a very small part of it. Naturally I give them their due respect

While you regard them all in all. As to the undiscovered, we are merely knocking at the door of the temple of Knowledge. It indicates the importance of research. Unfortunately, Indian universities with a few exceptions are turning out all kinds of pseudo-literature and that in voluminous heaps, making life stagnant; while it consists in movement.'

'You say I am an agnostic ! Plainly, you mean, I am bad. Yes, I am bad. We are bad only as long as we are ignorant; and I do not claim to be all-knowledge. No man is perfect; not even the most popular man in the world. There is no perfection. Perfection is only the attribute of God. But evolutionism itself is a religion based upon reason developed by God-fearing men to remove hypnotism worked by hypocrites over the ignorant and the unintelligent; secondly, to remove the fear of God against progress. Ever since the intelligent man noticed his prayers unreturned, his efforts made useless by the cruelty of nature—earthquakes, floods, storms, the rigour of climate—the rain does not stop when its need is fulfilled ; while God is supposed to be sympathetic—when he found that in such catastrophes God stands for the destruction of the good and the hypocrite alike without any mercy, without distinguishing between the right and the wrong, between the deserving and the undeserving, with no sense of justice, he realized the importance of the saying : God helps those who help themselves, and he fell more and more

upon his own energy, his resources, upon his own wisdom I had a servant. One day he went, of his own accord, to fetch water from a well. As soon as he put his foot against the support of the pulley, the piece of wood broke down under the weight and the servant fell into the well along with the piece. An intelligent engineer might have saved the situation: he might have noticed that the age of the piece was over (I have heard that in the United States in certain cases the strength of a cable is measured and any breakage inside it is prejudged by a test before it is put to weight). However, on hearing of his fall, I could not think of his being alive. But he miraculously escaped, and that without the slightest injury. People were thanking God for His graciousness. It was really an incident—life is to be deliberate: incidents in life are experiments in science—it is made of incidents, and most of our things are not under the control of intelligence. This world—particularly, our solar system is made of one-way marching on facts and events under the direction of laws. However, God knew of his fall, he was responsible for his safety. It seems all strange. Ever since an intelligent man became victim of many injustices and untold miseries at the hands of the cunning, ever since he noticed the virtuous being abused, found great men left in obscurity, saw the wicked being favoured and those who possess no virtue being exalted and recommended, 'honesty in rags and rascality in robes' he began to

believe more and more in the earthly appearance of God—God in man ’

‘Life is essentially a struggle between evil and good (A protestant is one who protests against evil.) According to this theory of life, should a person lose the capacity of resisting evil, should he feed up evil—what to talk of conquering evil—life is dead? The deceitful—who do not actually believe in God, though they expertly exploit Him and His institutions—through their crafty nature reduce decent people to degradation by pandering to their lower instincts, by intimidation, by hypocritically accusing them of irreligiousness and of character and, ultimately, fool them by pleading the cause of an institution, nationalism or humanity, while the sentimental, the sentimentalists and the tradition ridden rigid people caught up in the snares of the wily through their ignorance would propagate evil rather than cut it off by inducing a gentleman through appeals to idealism regardless of the peculiar situation and interests of the poor victim of tragic and shocking circumstances with the Damocles’ sword ever hanging over his head to promote the well concerted designs of rascals, and thus these people on the test of pragmatism, empiricism and rationalism are responsible for practically goading God fearing and God obeying persons to Agnosticism (This is not the only cause for the spread of disbelief in God) For clarity, the instances of personal experience in this association are necessary I was in the city of pandits, and there some of these people for

the fear of the exposure of their crookedness accused me of Communism, of revolutionary political activities against the British, of character and, finally, asked me to become a Sadhu for serving the nation; an all-India-known pandit, a pardhan of an Arya Samaj and an Indian Christian pastor accused the writer of irreligiousness—of atheism and of bad character—to cover up their own sins. Experience teaches that women who are polygamous or who secretly sell themselves, surreptitious procurers or persons who steal funds belonging to temples, mosques and churches; and the like put all sorts of obstacles in the name and under the garb of morality, law and spirituality (thus exploiting the religiosity of the people) in the marriage of a gentleman with a view to accusing him at their convenience—particularly on their failure to degrade him—of 'irreligiousness' in order to carry out their evil designs. These believers in the Economic Theory are master of their art. In the serviceable words of Fitzgerald —

The Moving Finger writes, and having writ  
 Moves on ; nor Satan's all Piety nor Wit  
 Shall lure it back to cancel half a Line  
 Nor all his Tears wash out a Word of it.'

'So the greatest problem before us is how to control a thief, a dacoit, a beggar and other parasitic and burdensome members of human society for the

preservation of this world from the fall of heavens on account of their sins and then for the establishment of the Kingdom of Heaven.'

'The transfer of power from the hand of the mighty to the hand of the moralist is a change from savageness to barbarism, and the transfer of power from the hand of the moralist to the hand of the intellectual, which has already taken place in advanced countries, has been the slow work of centuries. This transfer has been gradual but steady and constant through new encroachments of advancing knowledge. The same has been the history of the change of religion—from animal state to paganism, to ascetism, and from ascetism to practical religion.'

'To resume, a man is known by his actions, and not by what he says, a man's belief in God can be judged by the standard of living Godly life—by which is meant the life of honesty, justice, morality, responsibility, duty and of conscience. By action scientists have proved to be virtuous and sympathetic by nature. A holy man who is said to have prophesied the birth of the next prophet from man—and not from a woman—was probably a low type of person used to the objectionable habit among men, for which the destruction of many cities is mentioned in the Bible. The man who devised human sacrifice must have been a cannibal who cunningly exploited the psychology of his fellow beings in the name of religion and gods. A person told me that once Pandits, Mullahs, Padres combined together against scientists because

they do not pray, and requested God to put all of them into hell, and He did. Now hell resembles a desert where there is hot burning sand, scorching heat; no tree to take shelter, no water to drink, no food to eat. Industrious and intelligent as they were, they worked hard and brought water from somewhere. They watered their plants and turned hell into heaven. God was pleased and blessed them. While on the other hand the pandits being too busy to please God spread out ignorance, poverty, neglect of the laws of sanitation and hence epidemics, turned heaven into hell. Mohammad was so tired of them that once he said, "Fools of this world are the wise of the next."

'In this connection someone has well said.—

*Dharamsala dharawar rehnday thalardwaray thug;*

*Masitan wich kussatre rehnday ashag rehan alag.*

*Pick-pockets and pilferers live in inns, and robbers in temples;*

*Thieves live in mosques, and lovers keep away from these infidels.'*

'Fixism and organic evolution are two rival theories which have been struggling hard against each other for supremacy since the days of Vedas—and evolution seems to be gaining ground. Most of the people in Buddhist countries are evolutionists. So are the Russians, though in a perverted sense. It is fast spreading out in Europe and America.'



"You say that this earth evolved from one particular kind of matter. There must be some Creator of that," said the pandit.

"So it means there is a Master of God and thus endless Creators." At this the pandit laughed wholeheartedly and remarked, "Thus you null down the whole show of Hindu Philosophy."

"But what is the use of Darwinism? Does it help us in any way?" asked the pandit.

"Yes, it does. It means bringing out an entire change in the mental outlook of the people, it means rejecting the wrong thought and accepting the right one, and ours and our children's success or failure depends upon right or wrong thinking. The idea of evolution is the right thought. Its spread means the spread of right thinking."

"All religions have been trying to solve the problem of evil, and all of them have failed. Evolutionism also tries to do so by giving full explanation of the play of instincts. At least, a transformist is free from the charge of exploiting the masses which has been done by the eccentric fool and the hypocrite for centuries in the name of religion, sacrifice and patriotism, for an evolutionist believes that all our actions are guided by the idea of self protection. Again, an evolutionist has his own standards of morality. He believes in killing himself if he becomes a burden upon society. He also believes in making a place for a better and more useful type. I

brow a transformist who tried to save the extremely plightful situation of a girl by asking if he could do anything for her; by permitting her to put all sorts of blames and accusations upon him, by allowing her to abuse him worst if that served her purpose. His principle is the principle of non-violence. He does not become a dead weight through fasting to be carried by others. This is the policy of the pusillanimous martyr. He believes in remaining of use to human society even after death. That is why he believes in giving his dead body to physicians so that they may have the chance of studying the functions of different organs, of studying the unknown diseases, and, above all, of studying the difference between a highly developed brain and an ordinary one, and thus through this acquired knowledge further the cause of humanity. He even desires to have use of his bones, whether in the form of handles of knives or buttons after death. He is against waste and superstitions.

'Historically heretics of India had long recognized that man had grown as wheat had grown. But it was left for Darwin to place facts and arguments before the public in a convincing manner. In the dim past man was born as louse is born on the skin. Budha was iconoclastic so was the founder of Christianity. But they were men of action, of love, tolerance and character.'

'Lastly, a man of science is not against religion rather he explains religion. He only opposes the so called religious, because they put in ever increasing obstacles in

the path of those who labour hard to bring together the resources of science, and place them at the feet of humanity for the relief of human sufferings in accordance with the laws of Nature. He is wise enough to observe in nature two kinds of energies: the conscious and the *unconscious*. *Can the conscious energy come out of the non-conscious? I do not think so."*

At this a number of tongues acting differently came upon and they wanted to draw me into their argumentation. So I left. Among our people everyone thinks to possess more brain than others, and this is the psychology of the defeated. Personally, I like a practical mind, and decidedly not argumentative people. When I notice a move is made; a step is taken, instead of useless argumentation, I rejoice. That is surely a step forward in the march of life. That is what I like.

## **XI. COMMUNISM AND INDIA**

There are four different political movements in the world—Fascism, Nazism, Communism and Democracy—and they are based upon definite conceptions of life. These movements are expressive of our instinct of self-preservation and that of adventure. The former two—though not dead—are not in power. So we would leave them alone for the present. Communism and Democracy have been passionately and vehemently carrying on campaign against each other all over the world after the end of the World War I and II; and now they are heading for another final and decisive World War III.

Communism in practice does not exist anywhere—not even in Russia. It believes in absolute equality of all men; it means every man shall be in level with each other with respect to clothes, food, housing, hours of work, wages, medical aid; educational facilities and sources of recreation. It sacrifices the individual for the State and places the majority at the mercy of the minority. It does not appreciate difference in brain or in character; it explains away the apparent difference in individuals as the result of accidental and environmental factors; it does not believe in character, wisdom or heredity. It trusts in labour—working hard and doing for long time regardless of effectiveness and efficiency. It recognizes

the sex gratifying nature of animal man in variety and allows its satisfaction. It accepts the replacement of the middle class called the 'Intermediates' by the Government servants. It is State Capitalism and State-slavery.

The theory of Communism was formulated by Karl Marx and brought into realization by Lenin who under the influence of the convincing teacher of hard experience often repeated and gained at the misery of the people introduced his Economic Policy. Stalin after bitter experience and the realization of profit as the greatest motivation in man's life modified Lenin's doctrine of each member working according to his capacity and receiving according to his wants to that of each according to the work performed. He derogated Communism in Russia to full fledged Socialism which is practised with Communistic methods and appropriates all business and land. (Factually everybody is more or less a Socialist.) He substituted the principle of profit for that of use. Now there are millionaires in Russia.

Historically, Statism is as old as the Pyramids. All the land of Egypt in the days of Pharaoh who sent Joseph of the 47th Chapter of Genesis as his agent to feed the Egyptians benevolently, belonged to the Government. The omnipotent State was the only kind of State the ancients knew. Nearer home—in India—during the days of the Mughals all the land belonged to the Government.

and in Afghanistan Statism has been practised for centuries—even now, it is heard, in the country of the Amur, all land is equally divided among farmers after every score of years. But is Afghanistan—with all the respect the writer holds for the human and manly qualities of the Afghans and despite his knowledge of the richness of the soil and resources of his country—progressive, rich or prosperous?

Life in the beginning was of Communism. The idea of non possession is the forcible recall from the past when our animal progenitors had no property to distribute, no clothes to wear, no means to cook, no money to use, when they drank at the same pool, ate the same grass or fruits, slept on the same ground, when there were no clocks—no time record—no season measure.

The reactionary Russian movement offers antiquity to the undeveloped world. India and Pakistan need a revolution which is the most released from the past, the most unprecedented in history, the most radical—the one which will improve the lot of the common man everywhere in the sub continent.

The theory of Communism is based on the belief that life is an accident. The astronomical study of the universe reveals that it is built upon some order of mathematical calculation, that the definite speed of the earth round itself and round the sun with its inclination of  $23^{\circ}$  giving different seasons saves life on it from being burnt

up or frozen to death, that the nearness of the moon would have brought the earth under huge tidal waves, that the respiration relationship between plant and animal life maintains both that wisdom is found in animals that reason exists in man with the wonder of producing great thoughts and of showing real affections, enduring actions and feelings, that life is subjected to limitation—imagine what would have happened if hornets were as big as lions—all these facts and many more establish that life is purposeful and deliberate

When life to a Communist is an accident he draws a corollary to it that the idea of the existence of God is a superstition and thereupon he builds his economic theory. To a Communist, 'Our honesty or dishonesty is nothing but our economic problem' (He is not a believer in the theory of quality or character) Let us now examine this economic theory he banks upon. The writer observed a man of four hundred thousand rupees speaking white lies in the court. It was Marx a German Jew—the Communist leader—who formulated the Economic Theory, which is half Communism. Now the thief, the robber the plunderer are all opportunists—they believe in the Economic Theory. A man who sells his daughter, a man who encroaches upon the wife of his son depending upon him pecuniarily, a man who gambles away his wife, a woman who sells herself and all the like believe in the Economic Theory. The degenerating, the degrading and the uncultured minds forward

as many theories concerning life as do the progressive ones

Man can be safely divided into four classes—namely, the highwayman or dacoit, the thief, the beggar and the rightminded—and these four characters are playing their respective role on the drama of life. Communism is the creed of the dacoit, it is the religion of the opportunist who does not believe in gratefulness or the acknowledgement of indebtedness. Instinctive highwaymanship—most of our actions are instinctive—passes under the polished and political name of Communism. Both the dacoit and the Communist are sentimental—they rob the rich and audaciously and ostensibly favour the poor. Both are arrogant and overriding in triumph and power, they are submissive and cringing in defeat. They are intolerant of resistance and opposition—they are ruthless and murderous. The Communist would even betray his country for his ideology which he believes would lead mankind to a Utopia. Evidently, he does not betray his creed for monetary consideration, though he borrows and spends it on Communism propaganda and recruitment of a Fifth Column even in a friendly State. He is not straightforward, but he is equivocal and minimizes his guilt by clever or diplomatic statements. He ascends to power by stirring up the lower instincts of the common man—by making popular and pseudo democratic appeal of his ideology and by taking full advantage of the constitutional freedom which he himself denies to his opponents when he seizes power. The sect of Communism



is fanatically aggressive, territorially possessive. Practically, it rejects the overt political ideal of the investment of all authority and management in the proletariat and sets up a new bureaucracy in the name of the State and Party. Led by the emotion of self glory and aggrandisement the mediocre mind resorts to all means of hook or crook—fair or foul, legal or illegal—to carry Communism to the top. In his effort for the realisation of his dream of a Communist paradise he is socially, morally and religiously unscrupulous—Lenin never believed in democracy, he admitted that he preached democracy with deception, he taught the use of lying and diplomacy in political dealings and for obtaining political ends. The writer is not picturing here a Communist turncoat a political juggler and a racketeer but a Communist of conviction.

Indian movement is absolutely different from the European revolution. In Europe Marx and Lenin preached the masses the Gospel of Labour—that every thing is produced by the labour of the workers, who are in majority, and therefore the productive masses should control the affairs of the State and everything that belongs to the State. But in India we propagate that everything—may be our educational system, our arts, our social or moral organisation, even our character—the more intelligent the person the more the ability in him of distinguishing between evil and good—is the product of intellect. So the most intellectual or brainy person—

whatever sect, creed or race he comes from—should be at the helm of affairs. So Indian movement is a world movement

Clarity is better sought by exemplification. A bus company in the United States handed over its business to the Municipal Committee under a set of circumstances. The industry was socialised to provide service to the public at an enormous loss to the Committee. One day a man with a spark of genius saw the Mayor of the city for taking over the business from the Committee to its relief on two conditions: in the first place, he would not pay any tax to the Committee; secondly, he would reduce bus fare to half. The Mayor could see a huge gain to the public at a little cost to the Committee. The bargain was struck right at the moment. Since then the Five-Cent Ride Bus Company has been discharging its duty efficiently and serviceably. Again, the conditions in both India and Pakistan are quite different from those in Russia. In the first place, India and Pakistan are populous over-crowded, while Russian population is less than half of that of both the Dominions with an area of land five times that of both India and Pakistan at its service for expansion. Secondly, the lands of the Dominions and their known resources have been exploited for centuries, while the lands of Russia are virgin—its soil rich—and its vast resources unexplored and untouched (When the resources of a vast country are at the command of the State it naturally gets militarily powerful). Even then with all

these advantages of sources and resources to Russia the standards of life in that country are not higher than those in India except in the matter of military power and political oppression with a record of woeful imprisonment of about ten million people enslaved in its concentration camps or farms. There was forty percent rise in the living standards in the U.S.A. in the last eight years. During the twenty prewar years there was decline in living standards in Russia, from 1929 to 1938 real wages in Russia declined forty percent, while in U.S.A. they rose twenty nine percent because of its progressive economy. Such a large country—as is Russia—with vast natural resources of production for eating and living can afford to waste by practising any political theory and maintaining any system of governance. But our position in the world is different, and on that account we cannot afford to waste time, money, material or energy in the performance of fantastic experiments. We should follow an ideology and adopt a system of government—which would ensure progress and prosperity to our country.

## XII. ON SEX STANDARDS

Evolution is the accepted explanation and principle of life among scientists. According to it man has emerged from animal kingdom, and among animals there are only two main activities—assimilation and multiplication. Primitive man was a little improvement on animal life, and his life was usually guided by the same two rules of eating and breeding. The greatest tragedy of life even today—at this very stage of civilization—is that man with all his deceptive gloss of culture has not developed sufficient reason and character to accept the ever rising standards of human life and to assert himself against temptations or forcible recalls from the savage past which pander to his lower instincts. Thus he starts with inherent weakness and easily becomes a victim of fallacious philosophies of wrong materialism and nihilism which are unabashedly and aggressively propagated in the absence of any scientific opposition and resistance to inculte garbed perversity in the name of scientific enlightenment, sometimes merely with the object of making money cheaply. On the other hand even to the man of genius life is unintelligible and when he snatches a few secrets relating to it from nature he is handicapped by his lack of power of the clearness of expression and inadequately developed language, and from the unresponding, indifferent,

### XIII. ON TRUTH

"If Christ were to come again and live in Italy or Germany, he shall be shot down for the expression of Truth," said the Bishop of London, and the writer believes that he shall meet the same fate in most of the other countries. Even in those countries which claim to possess the spirit of tolerance he would starve. From the above given statement we can judge of the seriousness of the matter. "Where ignorance is bliss, it is folly to be wise."

Truth is dynamite, it is explosive in nature because it attempts to dispel prejudices, old and stereotyped traditions, customs and usages which an average man being superstitious holds as something sacred and an essential part of his life. That is why almost every body, being afraid of ignorance and thus with a view to saving one's own situation, runs away from it. Only a few dare to tolerate truth, and there are still fewer who can accept truth.

In this connection the denouncement of Bayal for introducing the counting of pulse and the number of respirations per minute in medicine and the driving of the Vienna physician into a mad house for introducing sanitary measures in a hospital are outstanding examples of punishment which the discoverers of truth met at the hands of ignorance for the expression of truth.

Truth can be divided into two classes the known and the unknown, the discovered and the undiscovered. The known truth has been sufficiently assimilated, whether through wisdom, instinct or tradition, by the broad masses through centuries, and is no longer dangerous. For example, the teaching of the principles of Christianity is no longer dangerous, though every now and then—even in these days—comes from some remote corners the news of the death of some missionary at the hands of savages. But all the discoverers of truth in the past suffered a great deal at the hands of ignorance. The discoverers of the unknown truth still suffer in this world because the world is quite satisfied with the old methods of hit and miss and is not yet ready to follow and accept the clear-cut ways of wisdom. The salary or the promotion of a man should be according to his value to the institution or university and not because of seniority or life membership is a new truth discovered by Ruthvan. Suppose for a minute on the retirement of a head of an institute, the youngest but the most intelligent member who has just joined the institution is made the head, one can imagine what would happen. The writer is sure all the rest of the teachers would grieve, become jealous, revolt and cause trouble because they cannot accept truth.

Truth is a condensed statement of fact which pushes life forward. It is a principle of life or rule of conduct, It is supported by experimental evidences. For example

furious, fanatic, intolerant and blind public. Thus we move on the scale of civilization by the process of hit and miss, and not by the clear-cut ways of wisdom; say, for example, Darwin did not understand Darwinism—survival of the fittest means the victory of the higher instincts over the lower ones, and not otherwise.

What a pity! An average man does not understand the meaning and significance of human life; he goes on injuring himself against his own interests; and does not follow that his life is different from that of an animal. Life is made of impulses, emotions, feelings, habits, instincts, desires and tastes. Tastes of life are many and manifold, one is that of self-gratification among many others, illustratively, that of the pleasure at the sight of a delicious dish, that of the consummation in the ecstasies of sports and love, that of the realization in art, dancing and singing, that of the rapture that comes from the beaming face of robust health, that of the enjoyment of wearing a new exquisitely-cut suit, that of being lost in a book, that of service to others or of calming one's innerself by making brave successful decisions and that of following inspiring course of a moral, social and ideal or spirited life in opposition to a clandestine, furtive, conscience-bitten, disgraceful and treacherous path of life against our sound, long-established, social and moral foundations.

Marriage in the beginning, and later on in its monogamous form, was introduced with the express purpose

of enjoining the parents the responsibility of the care of children with a restraint on indiscriminate and irresponsible reproduction. The next advanced step in life was the innovation of the standard of love as the basis for marriage—among primitive people marriage based upon the system of reproduction is satisfactory; while among the highly evolved men the satisfaction of romantic temperament is of more importance, though physiological desire cannot be ignored. Now a wise person seeks to intensify the rapture of love with the desire of having better reproduction—a genius tends to precipitate. So with the advance of time the meaning of sex-gratification from the wasteful way of seeking momentary pleasure of cohabitation changes into the deliberate, discriminate, purposeful and thoughtful process of spending sex-energy for the development of sound health and strong body as immunity against diseases which shorten the length of life, for the growth and enjoyment of cultural tastes, for the building up of character which insures one a firm stand against odds in the present struggle for existence set up by the heart-breaking and never-straining conditions of our civilization, and for sharing activities which are building up a new world; a world of new conceptions, the age of originality.



life is co-operative. It is a truth. The very human body is a co-operative organisation of cells. Co operation is a law of life. The success of individual, national or international life depends upon the understanding of this truth. Those nations which practise and understand this truth are more succesful than others.

Social, moral, material, mental and spiritual are different aspects of life. Truth may be discovered, and deal with any of them. The material aspect can be further divided into the political and the non-political. The non-political is strictly material. A truth discovered about the material aspect of life—may be in chemistry, physics, medicine or any other branch of material importance is appreciated and rewarded. Richards of Harvard University was rewarded the Nobel Prize of 8000 pounds in chemistry for half-a-page calculation. While the propagation of truth about any other aspect of life is still dangerous.

## XIV. ON WAR

Historically man has been accustomed to fighting for millions of years his life has been a continuous struggle for existence (Higher principles of life are his recent discoveries) He inherited this tendency from his early progenitors. An individual fights against an individual, a family against a family, and a nation against a nation. When two individuals or two nations cannot remove the causes of friction, which is natural as the expression of primitive tendencies which we do not even now thoroughly understand, war becomes inevitable. When intellect fails to solve the knotty problems of life—individual or national—war is the natural consequence, and brings in its trail horrors which are beyond imagination and description—they are the expression of man's brutal tendencies. The occurrence of war admits of the inability of statesmanship and diplomacy to bring about an understanding between the nations and of their failure to prevent the occurrence of a crisis which may threaten to destroy the civilisation itself.

With failure—at least partial—in his attempt after the experience of operation upon the minds of top most Indian leaders for more than fifteen years to shake them off their perverse principles the author naturally came to the conclusion that reason is scarce and therefore imagined of the inevitability of World War III more than two

years ago (26 1 47) As to the blindness of this world one has only to go through the life of Galileo who detected the mistake coming down through centuries made by Plato Socrates and other Greek philosophers that if two balls of different weights and of the same or different materials be dropped together from a height the heavier one would reach the earth sooner Galileo pointed out that both the balls would strike the ground at the same time In order to convince his fellow professors of his view of a natural phenomenon he took them up to the top of the tower of Pisa and let the two balls, one weighing one pound and the other of four pounds, fall together and they bumped against the floor simultaneously to the surprise of his colleagues Even then—after the experiment—the professors of Pisa University went on teaching their students after the old wrong line of argument Even today the world is not largely different What a tragedy of life! One of the lessons that can be drawn from the story is that an error made by a genius is corrected by a man of the same type

Scientifically war has its uses as well The art of war as well as the means of peace are the products of intellect the former was developed as a means of defence for the protection of civilisation against ignorance reaction and destruction the latter for the advance of civilisation So war is not always unjustified sometime in the past it served the cause of life Conquest usually bettered the conditions of the conquered as the consequent result of

the close contact of a more developed nation with the less civilized one.

The recent Abyssinian war was the result of economic stress and of overpopulation in Italy. In the absence of a curative who could find out a better way of solving the problem Mussolini could not but resort to the force of arms. Man has resorted to war in the past; he does at the present. Probably the history of the whole human race is nothing but that of tragedy.

The problems of Europe are becoming more and more complex. The mischief-makers and the war-mongers are ever ready, for the satisfaction of their own instincts, to cause trouble and actually pray for the occurrence of war, regardless of the consequences. Fortunately human species has been producing curatives—men of genius—who can solve the difficulties of the ever-advancing civilization. If the ever-erring world does not provide facilities of work for them and remains buried in suspicion and in the life of security, the situation may become worse in spite of all our desires for peace. It is not the desire—though in itself a fine thing—it is the solution that is needed.

In trying circumstances the world changes sides and invents terms and words to hide its weaknesses. From a number of episodes of life one conclusion is certain that an individual or a nation should depend in the matter of a serious struggle on its own strength.

"History is a record of opportunities, gained or lost. It never repeats itself." Many an individual and many a nation have destroyed themselves because they depended upon the help of others. To make an intelligent person or a nation of intelligent persons one's enemy is not only a mistake but a misfortune.

## XV. ON GENIUS

Philosophers are strange creatures—by philosophers here is meant geniuses—Newton was a genius. One day he was sitting in an orchard, an apple fell on the ground. Newton was gifted with great curiosity. He asked the question to himself: Why did the apple fall from the tree on the ground? and why did it not fly away from the earth? Millions of people had passed before Newton, none of them raised this question. From this we reasonably conclude that the brains of different people are not equally developed: there is a tremendous difference between the brain of a genius and the brain of an educated man—the latter may not be able to understand and follow the former even throughout his life. Even to day different people draw out different meanings of the lines of the Quran and those of the Bible, and, sometimes, they quibble over their own explanations. Both Christ and Mohammad were rare geniuses: they are also called graced personalities. So life is distinctive. Fraternity as a form of social order and democracy as a form of Government are quite different things. According to Hazlitt a genius is sufficiently exclusive, self-willed, quaint and peculiar. He lives in and reveals to others a world of his own, he invents a new view of nature. And of Hazlitt Stevenson writes: "We are mighty fine fellows, but we cannot write

like William Hazlitt " "Hazlitt is ever Hazlitt," said Henley," and at his highest movements, Hazlitt is hard to beat, and has not these many years been beaten "

A genius is a person who, seeing farther and probing deeper than other people, has different set of ethical valuations from theirs, and has energy enough to give effect to this extra vision and its valuations in whatever manner best suits his or her talents, says Bernard Shaw According to Hitler, ' Scarcely a genius appears in a century "

\ A genius is one who makes something out of nothing, he leads people out of the unreal into the real, he turns darkness into light Edison was a genius he produced the electric bulb he invented the gramophone—he built a new world for us Henry Ford started his life at the age of forty one he gave us his automobile which makes the corners of a country meet, he is the first manufacturer of aeroplanes which are doing for the world what an automobile has been doing for a country Henry Ford was a genius, he made something out of nothing Formerly, in Detroit, a city of more than a million people, the responsibility of spending money for collecting its garbage in connection with the cleaning of the city was upon the Municipal Committee—it spent money both for its collecting and dumping Now the whole garbage of the city is sent to Henry Ford's plant where it is turned into fertilizer and grease used for lubricating purposes Now Ford pays money to the Municipal Committee, He made the

Committee, the workers in his plant and himself rich through his genius out of nothing.

Ask a school teacher why mathematics is taught in schools. He stops at the question; he is hesitant in answering because he is not well informed, he is not thoroughly educated, he is not resourceful—he is merely learned, probably, he holds his B A Degree. The teacher is laborious, he is industrious, he is hard working, he is painstaking but he is not wise—he is not a genius. Arithmetic is used in everyday life and in trade, geometry is employed in the design and construction of buildings, in land measurements, in the various works of architecture, algebra, calculus and higher mathematics in the form of pure mathematics is of greater importance in the study of advanced physics and astronomy, in the measurement of curved spatial distances, of speed and rotation of stars. Mathematics in both pure and applied form is largely applied in the practice of electrical, mechanical, civil, chemical, automobile and aeronautical engineering. The application of mathematics is so varied and its interests so wide that it has been rightly called the "queen of sciences".

Again the teacher draws lines on the black board and calls them straight lines. He does not recognize that they are not straight lines they are small arcs. He is not a genius, he is ordinarily educated. A genius points out our errors which we have been practising for thousands of



years—Galileo was a genius, he pointed out that the sun which was before thought to be moving is stationary and the earth which was before thought to be stationary is moving round the sun in an elliptical course H G Wells discarded the age old idea of 'History repeats itself' in favour of 'History never repeats itself' Charles Darwin replaced the idea of creation or fixation by that of evolution You will laugh at your savant when he says that the lines the teacher has drawn on the board are not straight lines because you have not been before accustomed to such a talk Many a man of genius has already been laughed at the eccentricity of genius is a common expression of the fact that persons of extraordinary originality are disposed to act in ways that are unlike those of ordinary people originality is so rare that it is almost discreditable, says Moore in *The Savage Survivals* 'we burn our geniuses at the stake and only some men of special races regard flowing as an appropriate activity for human beings' Let us examine our proposition Our earth is round, say, it is like a foot ball Can you draw a straight line on a round surface? No you cannot You can only draw an arc So the straight lines drawn by the teacher on the board are strictly speaking, small arcs Again, our terms of East and West are relative when our earth goes after six months to the opposite side of the sun, the opposite direction to the former position of the sun is still called the East

The following remarks of Dr A D Little about geniuses are worth noticing

In considering any plan for the organization of research one is immediately confronted by the difficulty that science in its highest expression is essentially individualistic and democratic. It resents autocratic control and wishes and becomes sterile under minute oversight and direction from the outside. The great advances in human knowledge have almost invariably been due to individual effort set in motion by the scientific imagination and sustained by a consuming desire to ascertain the truth. Pasteur, Curie and Rutherford were not dependent on organization for their results. They worked to the best advantage in proportion as they were free to follow the vision which moved before them. No amount of organization can make a Faraday. It may perhaps discover one, and is then privileged to provide encouragement, working facilities and recognition. With these assured it is the part of wisdom to leave him as much alone as possible.

Any really effective plan of research organization must provide for exceptional man, the man whose angles have not been ground down, who is sometimes not comfortable to rub against, but who has the spark of genius. He is usually a man who hates rules and system, regular hours, time slips and all the paraphernalia of organization. Organization can help him none the less by relieving him of burdens, making him master of his own time, furnishing equipment, providing organized and immediately available library facilities and by directing his attention to specific problems.

## PREFACE

English literature, a century before, was simply the expression of various forms of Christianity and its spirit. No doubt, it dealt with human nature as does the Modern English literature. In about 1860 English literature took a sudden turn as the result of intellectual activities of certain original minds born in England, France and Germany. Since then it has been marching on. So much so that during the last seventy years it has changed the whole surface of Europe. The revolutionary ideas of these active men brought about fast and rapid changes in the social order, moral outlook, mental attitude, in the way of dress, in the mode of living, in the ways and manners of the people of England. They also influenced the other Europeans, particularly, the northern ones. The result was that there came into existence a wide gulf between Europe and other continents, particularly, Asia. Regarding the other three continents, namely, America, Africa and Australia, no literature of any kind was ever attempted by the original inhabitants.

Modern English literature deals with this great gulf it creates all these changes. It deals with European move-

ments of Democracy, Socialism, Fascism and Nazism

So the main object of teaching Modern English literature is to bridge up this wide gulf which is still rapidly widening because of the rush of new ideas from the West, and thus bring about better understanding between the East and the West. Character from Evolutionary Viewpoint, besides being a thought provoking and self reforming piece of modern and progressive English literature, fully serves this purpose.

One of the natural consequences of this study is that to learn English literature one should either go to stay for long in England or America and notice these changes with one's own eyes and feel their influence with one's own mind, or, at least, one should learn it from one who has passed through and realized oneself these experiences.

Character from Scientific Viewpoint was written with a view to directing the evolution of our instincts, habits, desires, feelings and emotions into the right channels.

Our character is the result of our mental attitude. It is made of instincts, desires and emotions. Only a few of them are illustrated here.

We inherited character from animal kingdom and ever since we have been improving upon it with the development of brain. More intellectual the man the more the ability in him of distinguishing between evil and good.

LUDHIANA, INDIA

Mulkh Raj Nayyar

July 24, 1938

## XVI. ON CHARACTER

Man's character is very complicated its meaning is as deep as that of life itself it is evolutionary in nature. It represents his history of thousands of years, probably of millions. It is the result of the effect of his environment and the response of the germplasma to it. That explains why we differ in character. It is the history of the development of his variations added from time to time, it is made of instincts which can be safely divided into two classes the high and the low ones or, rather into the desirable and the undesirable.

To illustrate, the author was standing by one of his colleagues and discussing over the matter of placing things in a certain order—they wanted to use regarding the arrangement of things. On his asking he happened to say that the instruments ought to be fixed up against the wall at a place where they would attract the attention of the visitors. They agreed and the matter was decided upon. As to the arrangement of the glass cases they differed and reserved the treatment of the matter for future. It was much later that he thought of why they differed at all, why do we differ in character? It occurred to him that his colleague had already seen similar cases placed in the same order somewhere else which appealed to his sense of beauty, while he wanted to

satisfy his sense of utility.

**What is Beauty.** Again, in America he happened to live with a Chinese student for about four months. Chinese are a humorous race, and humour for some unknown reason is not one of our characteristics. Mr. Wang was quite familiar with him; they played and belloped. One day, to satisfy his sense of curiosity he asked Mr. Wang how he liked an American girl. "I do not like them," said he. "They have long noses, straight eyes and protruding foreheads.

The author passed no remark and observed judicious silence. But Mr. Wang would not leave him and placed him in an awkward position when he asked him, "Say, how do you like them?"

"You want me to speak truthfully," said he. "Surely," was the answer, and with a dim voice and eyes down-cast to hide impoliteness which his eyes and the expression of his face might betray, he said, "I appreciate them."

"Oh! You have no taste. You can never be a judge of beauty," came forth Mr. Wang.

But Mr. Wang failed to notice that my cut of features was not different from those of Americans. It struck him that beauty, most probably, is the reflection of one's own features, it is the reflection of one's own habits and mind.

Beauty is the habit of the eye. By the habit of the eye the author means the inherited character which has been formed and established in it by seeing certain objects continuously for centuries. We of the plains whose eyes have been accustomed to looking at sandy coloured clay and piercing through the hot rays of the summer sun are not as great admirers of the beauty of Kashmir or that of Mussoorie as are the Europeans, though in these places we likewise find relief from the intensity of heat the temperature of which sometimes rises to the height of one hundred twenty degrees. Sometimes a man whose forefathers have been living for centuries in a place where Mother Nature stands in its most beautiful form migrated to a plain. His children inherit that instinct of beauty which his forefathers developed in their ancient place of inhabitation. When one of his children after long happens to return to a place where beauty rules he finds himself in the position of a man who at the sudden recovery of something precious which was long lost and forgotten is overcome by the emotions of overflowing joy and sometimes in great haste the faithful kneels to prayer. The eyes of such a person quickly responds to the sudden appearance of beauty and he expresses his feelings of overwhelming joy in the form of poetry or painting. This is inspiration which a poet or a painter gets through his instinct of beauty. This process of inspiration also explains why a poet or a painter is born and not made. This sort of experience a number of men and women get

when they happen to see certain persons of opposite sex for the first time. The Englishman whose eyes have been filling on the verdure of spring, on small streams from various sources of water and from the melting of snow likes to have round his house, in imitation of the scenery he has left behind, grassy ground with small plants, if possible, studded with fountains. He builds houses with windows which open wide out into nature. The Moghuls surrounded by trees which bear delicious and tasteful fruits and plants bearing fragrant flowers enriched India with gardens. Man, after all, is a great imitator, being the child of Mother Nature he imitates nature. The Moghuls constructed buildings, after the fashion of his nomadic life in Central Asia, which from a distance look like white tents pitched on snowy grounds.

Love is beauty, and beauty is love. Regarding the beauty of women, to an active mind it is her smartness that first appeals. Some live because they are clever, while others live because they are strong, third live because they are agile and attractive fourth live because they are reasonable or useful, and fifth live because they are mysterious. Beauty is of two kinds the hard lined and the soft-lined. This is all about the physical beauty. There is the beauty of the mind and of intellect. The intellectual issue is of more importance than the moral issue. The moral instincts of certain persons do not fit in well with the ever changing intellectual environment. Such persons when they revolt against it become a great impediment to the course of progress and



are called reactionaries. Instinctive love is giving way in accordance with the naturalist's derivative theory to deliberate one. The idea of usefulness comes next. Leaving out the idea of marriage of an average person and the higher instinct of companionship and child bearing, success in marriage is in common interests in life, no doubt, patience and tolerance in these complicated days of advanced civilization help a great deal in carrying out the day. Whether she has got the habit of reading and is desirous of carving a name for her, is she interested in higher education? in learning the art of writing a book and in knowing the meaning of research which deals with the unknown phases of life, in brief, whether she takes life as it is are fundamental questions which hold an intelligent mind.

Besides, one of the new duties of the wife of a great man is to write his biography, which the world, particularly the intelligent one, so badly needs, and she is the only person who is fit for the purpose. Can she womanfully share his activities and carry out her responsibilities are other questions of equal importance?

Two self-respecting providers can build up a house much more quickly and easily in this keen battle of life which would become leaner for the coming generations. Life is essentially competitive. Such a couple would be comparatively free from economic embarrassment which takes toll upon health. The carriage of life runs better

and more smoothly on two wheels than on one. Besides they raise the standard of morality by accepting greater responsibilities in accordance with the law of progress. He cannot dare explain facts which this new standard of morality is based upon because of the fear of ignorance and the perverted in the non-existence of a free society which would tolerate and accept any progressive idea. He does not think it is even safe to explain them by using polite language which is ambiguous for an average man to understand as did the great naturalist when he was explaining the causes of the periodic reoccurrence in women: "A shore washed by the sea." It has been well said that truth is dangerous and only few persons can face it.

Before your servant leaves this topic of great interest he would say that old and ancient theories of love are based on sentimental grounds and new ones which have been forwarded by a number of eminent and competitive writers do not explain a number of facts and run against this theory of beauty which is essentially derivative in nature.

**Character is Born and not Made.** It is well-known and has been observed by unimitable observers that well-matched parents produce equally fit children who require less investment for making them stand on their own feet; give less trouble and more comfort to the parents. The daughter of Madam Curie, well-known for her radium

researches the application of which in different branches of science, particularly, in medicine, are known even to a layman, helped her professor husband like her mother to win for him the Nobel Prize. Such is the force of heredity. A number of similar examples can be cited in support of the theory of heredity. He admits the great science of genetics which is still in its infancy has not provided us sufficient number of facts and figures concerning matters in this connection to draw any definite conclusions thereupon. Life is essentially of variations, and the writer is confident if distant and different bloods of sterling qualities be mixed the results obtained would be simply amazing.

This accidently brings us to the important problem of character-reading by the microscopic study of the brain and this may open a wide door for the entry of doubt and conjecture regarding this subject of great importance. The comparative study of the most popular and of the best brains, after their death, and the conclusion reached thereupon and the experience gained thereby would be of great value to the student of human nature and invaluable assets to be inherited by the coming generations.

**Sense of Discipline.** Man's character is very complex. It represents his history of thousands of years. So it is very hard to dig it out. Mrs. R had come from one of the Southern States of America to educate her son at one of the leading universities in the North. Her son was,

then of about twenty four years, was a tall and good looking young man. He was a hard working student, serious by nature and would not waste time as many other boys do at the university. But in spite of this hard work and noble character, he would fail in his examinations. Mrs R who was not less than fifty years old found a friend in your servant and would often lighten the burden of her heart when she felt worried and embarrassed. One day she knocked at his door and he asked her to come in. On her appearance he could read the signs of disappointment in her face. He asked her to take a chair and why she looked worried.

'Well, Mr Nayar,' she said, 'I am worried a great deal over my son. He works hard, but still he fails every time. How do you get on with your studies?'

'Not so bad,' was the answer.

Disappointed she again remarked 'I do not know what is the matter with my son.'

With pressed lips he told her that our mental faculties are our inherited character.

At this Mrs R looked with wide opened eyes at him and said 'Is that right?'

'That is what science says,' was the answer.

After a few days her son disappeared from the house. He was told that he was working in a company, was making good money and was going with a girl. These Americans

are well disciplined people because they enjoy the benefit of conditions produced by a higher state of civilization

Again, one day he knocked at the door of Mrs R and on opening the door with her permission, he found an old man sitting beside her. Rather embarrassed and finding himself in an awkward position he closed the door silently and came back to his room. Mrs R thoroughly understood his bashful nature she followed him and asked him what he wanted

It was after a few days that she asked his opinion about the man. "I do not understand you, Mrs. R. Why do you ask my opinion about a man whom I do not know at all?"

"I mean to marry him," said she

"Marry him! What is the idea of marrying now? It looks funny."

"Well, Mr. Nayyar, conditions in your country might be different. My son has left. He would be soon married and I would be left alone in the house with nobody to talk with."

At this he found a sentimental Oriental defeated in him and quickly responded to reason. However, the man did not appeal to him and he told her that he would not suit her. Sooner or later, he expected that she would meet a better type of man. She dropped him there and then.

## ON CHARACTER

After a month or two Mrs R called him upstairs. As soon he reached the last step his eyes met a bright, dignified, well chiselled and intelligent face with soulful eyes, a little older than Mrs R. With cheerful voice he shook his hands with him. He sat on one of the chairs on opposite side of the table. They chatted and ate. Mr C was a farmer and owned a big ranch. He had brought some fruits with him which we commonly enjoyed. After having their company he came downstairs. Mrs R followed him and asked him the same terrible question "What is your opinion about him?"

"Well," He whispered, "go ahead. You will never meet again such a man." Therewith he repeated the sentence he had heard from an American girl friend of his "Life is an accident."

**What is love** The writer had finished his studies and had left the university. He was in those days working in one of the industrial plants. But every now and then he would go back to the university to meet friends. One day early in the morning when he was stepping up the footsteps of a distant out of town house he heard a voice hailing him from behind. On turning back he found a big automobile slowing down. He could recognize Mrs and Mr C. She was quick to perceive the kind of adventure he was after. She smiled and wished him success. The car moved and he looked on with a peculiar feeling of sadness. It was natural. The woman had laid him under deep obligation by

serving him in various ways, and he is one of those type of men who love ever trees. What is love after all? It is lasting memory.

These personal experiences the writer has described above have been given with a view to showing that civilized people understand and follow wisdom which creates happiness in life they are well disciplined. While the uncivilized, the semi-civilized and the perverted are self-willed unreasonably independent by nature, everyone of them is a leader because everyone of them thinks to possess more brains than the other.

The character of a constructive thinker is different from the argumentatively critical mind. When he was in America he attended church on Sundays. One day for him for the first time, he saw two rows one of boys and the other of girls. He adjusted himself according to the circumstances and took his place along with boys. Each boy was to go with a girl. He went with one of them. He followed the example of other boys and took a wooden slab and certain things to eat on a tray. The girl who was accompanying him took things of her own choice on her tray. They sat on opposite benches and placed the slab with trays on our thighs. While eating we talked on different topics. He noticed traces of disappointment in her face she drew out his sympathy. Some of the girls find hard as many boys do, to adapt themselves to new conditions of life.

This social function in the church did not upset him as it would have done many other Indians who being unadventurous and sentimentally moralist developed critical aptitude at the cost of constructive thinking. He took things as they were and began to think seriously about the matter. It soon impressed him that with the advance of civilization the duties of an intelligent priest are widening his responsibilities increasing

Man's character is very complex. He does not understand even his own character. Many cannot admit their mistakes, still more cannot realize their own mistakes otherwise all would have been equally successful.

**Instinct of Obedience.** One Sunday while sitting in the church a gentleman asked the author to go back. Of course he understood that he wanted him to collect funds. He paid attention to his words and obeyed. On reaching one of the back benches he felt in an awkward position and on noticing a fellow youngman begin laughing he sat down beside him. That reminded him of the saying 'We laugh at the folly of others.' After long thinking on his this behaviour he could reason out that his instinct of obedience overcame his common-sense, and obedience is a higher kind of instinct.

The character of children is different, though some of us do not even cross the stage of childhood. A child's life is guided by the idea of self preservation. A child would snatch away eatables from its parents and would



not part with them. A puppy barks and growls when its mother puts forth its mouth to share a piece of bread. The sense of responsibility is lacking in early and animal life

The character of an Englishman is different from that of an Indian. In this connection someone has well said "An Irishman fights before he thinks, a Scotch avoids fighting, an Englishman adjusts himself according to the circumstances, while a Hindu thinks and thinks." They differ in character because they are at different stages of human evolution or on the scale of civilization. An Irishman is carried more by impulses and emotions, a Scotch realizes his own weakness, an Englishman is led more by reason, and a Hindu flies in the air. In this connection Dr MacWilliams has well said, "Hindus are women and women are Hindus." Both of them have been living under the conditions of subjection.

**Mental Character.** The writer has been asked a number of times by a number of responsible persons why and how ideas occur to him. The former is the result of heredity which is as difficult to understand and as difficult to explain as the naturalist's very derivative theory. As to heredity sufficient new light has been thrown by eminent investigators in this particular branch of knowledge, but he is not in contact with the recent progress made in natural history because of the lack of facilities of a library and, therefore, cannot

provide the reader with the facts and explanations scientifically investigated and recently forwarded regarding this matter by a host of eminent scientists. Anyhow, the formation of different organs and parts such as eyes, bones, heart and nose is explained on the principle of heredity. The development of embryo to the growth of manhood is hereditary in character. Social, moral and intellectual instincts, even our habits tend to be inherited. It may not be out of place to say that our caste system was originally based upon the heredity of the physical characters. It was our racial problem. The attractive velvety complexion of golden-yellow of some of our girls is the result of the injection of the Mongol blood in us. With the advance of time the caste system shifted to the heredity of virtues such as of bravery and then to the heredity of mental faculties as is clearly shown by the stories of Mahadev, the God of gods, translated by Dr. MacWilliams. Afterwards this institution degenerated into a mere tradition. He does not mean that all traditions are bad. Some of them have been uplifting and have been a great source of happiness to a large number of people.

It may equally well be stated that Ved Vyas, the compiler of the first Veda and of the first Purana, Mahadev, Ram Chandra, the authors of Upnishads, Krishna, the author of the Gita, Bikram and a host of others, were Kshatriyas. Budha and Mahavir, the founders of Buddhism and Jainism, were also Kshatriyas.

So came the whole train of Sikh Gurus The blood of one of them has circulated again Christ and Mohammad came from the same family The daughter of Madam Curie is as intelligent as was her mother. Biology has been recognizing the force of heredity since long

Regarding the second, it is a process which needs description The historical trace of the subject would explain the subject better than a mere statement of facts Example is better than precept. The occurrence of ideas is known to him since long, though he did not understand the meaning of it. He thought it to be a natural process with everybody, and even thought that all brains are equal. Whenever anything new came under his notice, it left a deep impression upon his mind However, the impression began to be clear when he was at the University of Illinois Professor Brooks was a teacher by himself He would allow us to consult books in the examination But he would set such questions which would defy the unreasonable use of them He had been to India and had grown sympathetic towards Indian students Once, pointing out towards him, he remarked in the class that he had noticed that Indians students possess wonderful memory "Memory, no doubt," he said, "is a mental faculty of value, but it does not take a man very far" The writer could not exactly follow him It was again after two years that professor E. G Mahin of

Purdue University and now the head of the department of metallurgy of the University of Notre Dame, remarked in the class that though he was a successful professor and an author of two books, he noticed difference between a professor and other highly developed brains as to the occurrence of new ideas. It was only a few days after his statement that he happened to discover independently the greatest principle in biology described elsewhere. He does not claim to deserve any credit for his discovery. The principle was long time before discovered by the greatest naturalist. Thus things rolled on between his mental inheritance and rich mental environment of a highly civilized country. It was only a few days before he left the United States when an American friend of his told him that he was an exception. He did not exactly follow her.

On his return to India he started work at the Jamshedpur Technical Institute and there the occurrence of new ideas became rapid and fast. Thus things passed on between his awakening of the inner mind and his environment of Hindu religion. He came to the Benares Hindu University and there when one day he was walking through its grounds the scientific definition of religion occurred to him and therewith the meaning of progress and the meaning of the occurrence of new ideas became clear. He had not yet read the sentence, "Our ancients did not even entertain the idea of progress, nor do the Oriental nations at the present day." He came across

this sentence by Charles Darwin a few years afterwards

It took him a number of years to understand the meaning of the occurrence of new ideas, and therefore, he naturally does not expect everybody to understand him. Some will never understand him even throughout their lives. The brains of different persons are differently developed. Regarding the brain development, a few of us are at the same stage as are our monkey brethren. Some, he has noticed, find him as awe inspiring. It is creditable to them. They, at least, respond to the force of strong mental heredity. They do not still fully understand the meaning of the 'brain'. They are as young as he was when he was at the University of Illinois. But during the interval of a few last years he has covered centuries.

**Instinct of Prediction** He left Benares for Quadian and there the occurrence of new ideas became more vigorous. It was observed by so many gentlemen and one of them went so far as to ask him to proclaim himself a prophet. He has no desire to mislead the people. The temptation of reputation and other temptations which might lead to the easy solution of pecuniary embarrassments do not appeal to him. He is a man as are others made of habits, instincts and desires which are of different kinds. Therein lies the difference in character. If there is any difference between him and an average man it is simply due to the different arrangement of the molecules of the brain. He does not claim to possess any spiritual experience, he has never communicated with spirits.

he has never talked with any of them; for science is a philosophy of life based upon experimentation. Belief in spirituality and the dreaming of the dead is entirely a different thing.

New ideas occur to him when he is in contact with human society or with nature. That is why he is to produce rich environment and therefore seek company of all kinds of men and all grades of life. In this connection someone has well said that wisdom comes from the association of the masses. He has experienced that new ideas equally occur to him when he is brought to face and answer religious problems and questions.

Once he was sitting in the company of women who had asked him to see some magical trick to be played by a woman. During her magical performance he felt a cold wind touch his ears and happened to say suddenly "The hail stones are coming." Within a minute the white stones were rushing down like anything. Her trick was forgotten, and his trick worked upon them most amazingly. One of them asked him who he was, meaning thereby what god he was. He did not mean to play upon their innocence and told them that prediction was the result of herility. He did not, and does not claim to possess any supernatural knowledge. He is a simple man with simple habits who performs the same functions and has the same desires as does possess an average man. He learns from others as do other people. Rutherford hints

him to be prudent, while Mahin of Notre Dame University, under whom he specialized in metallurgy, indirectly informs him of his too much, full of danger, emotional character. He incorporates one and assimilates it, and suppresses the other. He feels under obligation to him whom he learns from. Communication is one of the most important means through which the human race has progressed. Prediction is the result of developed brain, and he dares to predict that in the next quarter of a century France, Germany, Italy and other small European States will amalgamate into one big State. The telegraph, radio, wireless, aeroplane, press and other rapid means of communication are making the four corners of the world meet. Under such conditions of life people with prejudiced minds will suffer most, the international instinct is a higher instinct. He has no objection to believing that certain personalities were gifted with supernatural and spiritual powers. Why should he? Who knows the secrets of life! At least, he is not gifted with supernatural and spiritual powers. The persons who launch their boats into the uncharted seas are richly gifted and well provided with means of defence as well as of attack. They have been called by one of the greatest naturalists, who gave definite shape to the evolutionary theory, as the 'Survival of the fittest' the meaning of which has been so often misunderstood. It means a struggle between higher and lower instincts, both within and without, it simply means the inheritance of the higher social and

moral virtues and of strong and higher mental faculties which enable him to push forward through thick and thin. The life with higher instincts is guided by a higher conception of life, that is, by the idea of progress, co-operation and adaptation. Coming back to the point again he was sitting with one of his close relations who was telling him of some petty affair in which he was not interested. He was deeply absorbed and was thinking of something else, his mind was hundreds of miles away. He did not know at all what she was talking of. She could discover that he was not paying attention to what she was describing. Angrily, in her usual way—the unwise cannot appreciate ability, wisdom only appreciates wisdom—the leader of folly is greater folly—she turned at him and asked him what she was talking of. Fearingly, he happened to look closely into her face, something in it stirred his mind and he could not only find what she was talking, but could also discover what she was going to tell. Thus he could save himself from the awkward situation. He was simply amazed at the marvelous development of his instincts. Once again, drawn out by a cool, pleasant summer breeze when leaning over about four feet high wall on the roof, as soon as they looked towards the Simla Hills they were simply overwhelmed by the beauty of Mother Nature fit only to be depicted by a poet or by a painter to record and to remind the influenced of the thoughts of sweet memories which brighten life. Dark grey clouds floating upon one another met their gaze. Soon



lower instincts, good and bad habits, is inherited

The addition of new factors to hereditary characters makes variation which may be in the right or wrong direction. The addition of prudence to other faculties is useful variation which is beneficial to the individual, and the society gains through its inheritance. The addition of the new experiences of parents to the inheritance of forefathers is handed over to children, and this variation causes improvement in the coming generation, making them better and better. It is said that the Americans are more brainy because of the intermixing of different nationalities. The addition of wrong factors to heredity, though seemingly useful, ultimately proves pernicious and destructive to the individual as well as to the society. "The wages of sin is either death or degradation."

**Primitive Tendencies from Animal Kingdom** Life mysterious deeply surrounds us. Life abundant is over our head, in abundance it exists on earth, it floats abundantly on the surface of the sea, still more abundantly it is found deep into waters. It is said that the blue colour of water is due to the millions of lives per cubic inch of water. Some are vegetarians some are meat-eaters. Some filter air through their bodies and catch millions of small lives to make their meals while others filter water for the same purpose. On a little higher scale small life lives upon smaller one, bigger one upon big one. Life lives upon life. Some stealthily draw out their tentacles to catch their prey, while others draw out their daggers and claw

and thrust them into the breast of others, and suck their blood. A few spread out their networks and invisibly hold their prey. Might seems to be the rule of animal life, and among savages might still decides. The weaker, probably the smaller, were busy in developing ways and means to escape death at the hands of their enemies. Some learnt to pretend dead and drop in water, some on earth, like stone. While others developed the instinct of co operation as their means of defence and self protection and began to live in groups. Some went into the stomach of others and thus started their parasitic life, while others sought shelter of the strong. These primitive tendencies inherited from early progenitors even now exists in us. The hissing of a snake to frighten or fool its enemy is found in us in the form of bluffing.

Animal life is mainly guided by three principles—the idea of self protection, of self satisfaction and self propagation. In other words it tries to escape death, it eats and breeds, an average man is interested in his self protection and self advancement. Celibacy or intentionally living alone is not found in animal kingdom. Those who fell upon vegetable kingdom for their food solved their first problem—the problem of food, because it was found abundantly both in sea as well as on land. They began to specialize in their methods of self defence and self advancement. Thus life has been marching on for millions of years. Wild buffaloes, horses and elephants co operate and live in groups. Buffaloes on smelling the

the coming of a tiger put their offspring and females in the centre, stand with their backs towards one another and with their faces in all directions to face the tiger. What is the fate of the tiger is well known. All the monkeys from whom different races are said to have been evolved are purely vegetarians.

**The Development of New Instincts and Habits** Regarding the system of reproduction it is a subject of deep interest and of great importance. The study of its history besides being useful is extremely fascinating. In early life there is no uniting of two individuals for reproduction. The individual at a certain state of its life divides itself into two parts which start their own individual lives. There are many unicellular organisms which divide into many parts and start as new lives. So far the improvement has been in the multiplication of reproduction and thus greater certainty in the propagation of life. While there are certain organisms which reproduce both by division and uniting. They are a step forward on the march of life. On a higher scale the multicellular animals produce special germ cells which at a certain stage separate from the parental stock and from them by repeated division growth and differentiation new individuals are produced. There are some animals which produce both the male and the female germ cells. A little further on the scale of life a male and a female simply come near, but do not unite and each sheds its own germ cells in millions to avoid uncertainties. While there are individuals which

have both the reproductive organs, male and female, on different parts of its body. Such an individual coil-, unites by itself or with another and reproduces. Further on we find animals who reproduce only by uniting with the member of the opposite sex. The change in habits as the result of the necessity of self protection, the search of food and the thirst of reproduction must have been responsible for all this differentiation and classification, the coming in of new instincts.

**Instinct of Polygamy.** The romance of life begins. The uniting of two separate individuals, of the male and the female, becomes a necessity. Life on land begins. The advent of life on land necessitates changes in habits of life and structures of both males and females and a vast diversity of devices for making reproduction more certain and less wasteful. We come to the mammals. The responsibility of nursing and guarding of fertilized eggs falls upon the female. The retention of the eggs for a shorter or a longer period during development limited her period of sexual activity. This brought further changes in the habits of both males and females. In the early life a female submits to any male, who was usually the most physically fit, partly out of necessity and partly out of fear. In Hardwar monkeys the number of female monkeys is more than that of males. This shortage is the result of jealousy on the part of the male. So originally both the male and the female were polygamous. A number of persons are polygamous. They inherit this instinct of

-polygamy from their animal forefathers. Practically the whole animal kingdom is polygamous. The savage survivals still surge in human blood, it may be called evil.

**Sense of Faithfulness and Selection** So far life has been progressing through the desire of escaping death from its enemies, and the most physically fit survived. A bit further on the scale of life as the result of protection, particularly, of the female by the male, whether through actual fighting or through guidance, the sense of faithfulness accompanied by the instinct of admiration on the part of the female arose for the male. This, directly or indirectly, as the result of transfer of hereditary characters through the process of reproduction and of action and reaction between the germ plasma and its environment, whether living or non living, making it more elastic and reasonable led to the development of beauty which is more or less related with reason and the sense of its appreciation. This sense exists in us in the form of our appreciation of sportsmen and wrestlers. We come to the stage of life where we find some males and females who led by the desire of satisfying their sense of beauty go out in search of suitable companions when they attract by various means and devices and in accordance with the development of their instincts select only particular ones and hesitate and refuse to unite with every member of the opposite sex. Some attract us with their musical voice, others by just an act of instinctive sympathy and by an humble way of sitting some charm us with their virtuous

innocent looks, and others magnetise us by passing a few intellectual remarks. We come to the period of life when physical attraction, moral and social virtues and intellectual factors have begun to count and play their role. Education, manners, higher tastes, games, arts are new ornaments of embellishment and decoration. The sense of love awakens. At this stage a new factor of selection is introduced in life. The female adapts herself further and takes the risk of monopolizing her male who is inclined to take undue liberty and licence by extending her period of sex even after conception, and he in return for her sacrifice willingly begins to share her responsibilities of nursing, guarding and providing their offspring. This adaptation on her part leads to further changes of habits in both the male and the female. New habits of life are formed and the most important being the sense of monogamy which developed as the result of check and control on account of conception of selection, faithfulness and the sense of responsibility, and even to day we find a woman who is chaste because she understands the value of chastity and a woman who is chaste because she is afraid of the idol she worships.

**Sense of Distinction** This sense of selection in the form of like and dislike, may exist in ovum and the sperm as one of the hereditary characters. An undeveloped and insensitive ovum would open its lid to any sperm that first approaches her. But a highly developed and sensitive one may refuse to receive any out of millions of

sperms that surround her. It will respond only to a few of selected ones according to the law of natural selection. Thus the sense of distinction comes in our life. Similarly a sperm of high quality may refuse to unite with an ovum of low grade. This statement does not only explain why a woman does not usually conceive at one and the first union as other mammals do, but also explains the production of children of different quality from the same parents.

This sense of selection or of love is not found in all human beings. The Master Passion at its highest stage in any form, whether limited or extended, seem to be characteristic only of the virile. In fact, the life of some is guided by love and of others by hatred. The former inherit desirable and useful factors and the latter undesirable ones. That makes a natural division between the good and the bad. Among the latter there is a class which does not understand the meaning of love and courtship by which the author means the study by two individuals of each other's ways, habits and mind before marriage in order to be saved from future pitfalls; after the study either to be separated or to be further united. Birds of different feathers cannot get on together; the Sadhu (love-determined) cannot get on with the thief. In fact, hatred-determined misunderstand the meaning of courtship. They insist upon old traditions and customs because they live by them. Among the primitive people marriage based upon the system of reproduction is

satisfactory, while among the highly evolved men the satisfaction of romantic temperament is of more importance, though physiological desire cannot be ignored—Rabindra Nath Tagore was a 'vagabond' (of romantic temperament) boy.

**The Sense of Companionship and Friendship in Women** Different persons are at different stages of life, and individuals make nations That sufficiently explains why the marriage system practised by the Hindus, the Mohammedans, the Greeks, the Italians, the Spanish, the French and the English is different The northern Europeans are liberal in their outlook of life and have wonderful power of assimilating the right kind of foreign blood. We rapidly come to the United States where scientific progress is liberating human minds from the slavery of prejudices and melting different nations into one pot The system of marriage there is based upon the idea of love It does not mean that all Americans marry upon the sentiment of love, or are equally liberal and are equally evolved The writer heard of a father who shot down his daughter for going to a dance He would not go into details of all his personal experiences and other sources of investigation regarding his information of this matter of selection He would cite only one case and that he thinks would serve our purpose He noticed a girl, no doubt, herself of sterling qualities, rejecting one of the most brilliant students according to the intellectual standards of American Universities Probably the



girl was right; he lacked, at least, moral courage. However, she got attracted to another student who could not be called good-looking in any sense of the word. His eyes were deeply sunken; his face was palish and his cheeks hollow. Probably some words fell from his lips and she got attracted. He did not know even of her attentions of which she tried to inform him through others, but she failed. The man was leaving the place, probably, for good; her heart was sinking. Finding an opportunity she went straight to him and wisely informed him: she would wait for him for some years. The man was startled. After noticing something in his face she went forth and said that he need not be afraid of the economic responsibilities as she was well-equipped to take care of herself. After studying him further she again said that she would not marry at all. The man was sympathetically pierced! When the present writer came to know of the affair he was deeply impressed that she is a type of woman who is going to mould this world to a new phase of life. *Who knows the secrets of life? Only the foolishly confident and the childishly optimistic are sure of it.*

Man's character is the result of his mental attitude. It is revealed by his intellectual tendencies and activities which are representative of his primitive instincts. Formerly the fight of the right-minded against the combination of thieves, thugs and robbers was more of physical nature, and now it is of intellectual kind. If a right-minded person entrusts a dacoit with a revolver

by mistake, he is tempted to make it his own. The same is the case with to-day's intellectual robber. If he happens to get some idea which serves his purpose, however wrong and in whatever condition, he is tempted to make it his own with an instinctive desire of seeking popularity which means more opportunities for robberies. The opportunist threatens the right-minded man and thus tries to silence him with a view to carrying out his own projects of high handedness. The dacoit tolerates a thief who exploits the psychology of all kinds of people—a thief is faithful to none. He desires the acquaintance of a thug who is a beggar, a thief and a robber at the same time. A dacoit is bold and aggressive. He pities the beggar, and the poor; he is generous towards them because of his wrong mindedness. He robs the rich and helps the poor. He is not incapable of appreciating the right minded person.

Communism is the expression of our primitive tendency which represents our sense of equality and classlessness inherited from our early progenitors. It is the creed of the dacoit. Much has been said on Communism by Sheikh Sadi, Goldsmith, Mahadev, Balai Shah and others. It is essentially an Asiatic movement. The hard fact-facing scientific movement is entirely different from the sentimental Communism. The Western society has passed through the sentimental age. So there is not much chance for Communism to get the upper hand in European countries.

The character of an intelligent man is different. He is a changing entity because he realises his own mistakes. He does not believe in clashes of ideas; he believes in observing judicious reticence which he regards to be valuable.

Man can be safely divided into four classes: the lacoit, the thief, the beggar and the right-minded. They play their respective role on this theatre of life; there is a keen struggle between these different characters. The first three are pernicious elements of human society; they hinder the progress of civilization; they believe in the law of the jungle. All our actions arise from self-interest—whether of lower or of higher interests. To lay off people from the right path of life they advance as many theories concerning life as do the progressive ones. One solution of the riddle of life lies in the thorough psychological understanding and control of these characters. The victory of civilization is the conquest and elimination of these malefactors by the respective methods of the power of persuasion—the appeal to reason—and of the setting-up of an environment of social, moral and intellectual standards, and of the destruction of the irredeemable.

Man has progressed through the creation of new and higher tastes, selection, natural or intentional, being one of them. The ideas of progress, idealism and spirituality are not found in animal kingdom. Did you ever see an animal pray or undertake any spiritual activity? The

attitude of both Budha and Christ throughout their lives was sympathetic and progressive. They broke down a number of traditions and set up new social and moral standards. No doubt, most of their energies were directed against evil. It was to check evil which was being practised in the name of God and His institutions that Christ said, "When thou prayest, enter into thy closet, and when thou has shut thy door pray to thy father which is in secret," and before the writer came to know of this sentence when he felt praying he would do so in his own room. He still holds that an average man, leaving out the priest whose duty is to preach both outside and inside church, would do good to society if he keeps his relation with God in his own room. However, it was Charles Darwin who first clearly stated the idea of progress when he wrote about seventy years ago "Our ancients did not even entertain the idea of progress, nor do the Oriental nations at the present day." It does not mean that no other person before him was progressive in nature, that none before him understood the idea or the meaning of it, and for the last several years the author's various activities in different directions have been mostly directed towards giving a definite shape to the idea of perpetual progress.

## SOME IMPORTANT LESSONS

First was the Spirit of the Universe, this Spirit manifests in the existence of conscious energy, the universe is under the control of laws and principles

First was only one fundamental energy

Evolution appears to be universal the universe, the solar system, matter, the earth, and life itself on the earth have been evolving physically, morally, socially, mentally and ideally man's life is still evolving, thoughts—even the most powerful ones—have undergone evolution, they have changed and are changing on realization

There could not be any changing life without the changing universe Change is the law of life

Discovery of the laws of nature and learning the art of living in accordance with them is the mystery of life Religion is obedience to the laws of nature

Life may be likened to a wave on the ocean of the universe moving towards the never ending, ever receding unapproachable horizon

Life is purposeful and deliberate incidents in life which are beyond our comprehension are called accidents

Life is a continuous struggle for existence it is a struggle between evil and good—which evil is a surge of undesirable animal life in us

The greatest problem before us is the problem of evil Its solution lies in the full explanation of the play of instincts.

A man is known by his actions and not by what he says a man's belief in God can be judged by the standard of his living Godly life—which life is of duty, honesty, justice, responsibility and of conscience

Life is essentially of intellect, it is of character. So the most intellectual man should be at the helm of affairs

Different peoples are on different rungs of the endless ladder of progress Therefore they should have different forms of Government.

That society flourishes most which does not allow the individual to live upon the society, and the society to live upon the individual.

The best form of Government is that which effects justice between two individuals and between the individual and the society

In this world of thieves, thugs, dacoits and other burdensome and parasitic members of society who advance as many theories concerning life as do the progressive ones, assertion of one's rights should be regarded as a bounden duty for the safety and protection of our civilization.

### ERRATA

*Corrections are* nebulae on page 4 line 26, sensitive page 57 line 25 former page 70, line 6 larvae page 76, line 9 circulated page 148 line 2 is page 169 line 6 rocks— page 172, line 14 adoption page 180 line 18 monopoly page 225 line 20 fortunes page 249 line 19 and efficient page 258, line 3

## **XVII. OUR GREED IS PROGRESS AND CO-OPERATION**

Our lives are not our own. Consciously or unconsciously, willingly or unwillingly, they have become the lives of others: It means life is progressive and co-operative. A mango tree is nourished because it is great; because it co-operates by giving up its fruits freely and ungrudgingly; while sugar-cane is watered only to be cut off, because it retains its juice for itself, because it is selfish. Progress and co-operation are the products of intellect. The progress of our customs, our manners, our ways, our system of marriage etc., summarized as our social and moral organization depends upon the progress of intellect. To illustrate, the system of marriage has been different in different times and is different in different countries. Again, morality has been defined as obedience to the social laws established for the welfare of society—these social laws are merging into civil laws in advanced countries; the custom of Sati is gone. Medicines, watches, spectacles, electric bulbs, automobiles, radio, hundred and thousand things of modern life (none of them manufactured in India), which are briefly expressed as our arts, are also the results of developed brains; and our arts are too old to compete with the better products of the West. When one needs a pair of spectacles he has to buy it.

We have a record of failure of a thousand years, because we fail to produce men of high mental powers as those of Krishna and Budha, Newton and Darwin. If born by chance, he is killed or driven to madness by our degenerating forces,

because to a thief and a slave honour is more than death. The requirements of strict observance of unreasonable rules laid down by some unknown sages of the dim past and other stereotyped obligations which, since long, have undergone neither reform nor adaptation, forced upon only obstruct the development of free thinking and stunt the growth of mind of the younger generation, as well as give rise to many quarrels between Hindus and Mohammadans over an unproductive cow of ten rupees, sometimes resulting not only in the loss of time and waste of money, but also in actual deaths of many human beings. We have developed critical aptitude at the cost of constructive thinking which often leads to irreconcilable discord and friction, sometimes, shaking entirely the constructed fabric of society. In reality all our institutions (social order) are those of slavish nature established by the defeated people. What is, therein, the fault of Englishmen? No race can live on wrong fundamentals—our fate is the result of right or wrong thinking. "The wages of sin is either death or degradation."

Obedience and co-operation are the positive and higher phases of human evolution, not non co operation. Napoleon would be afraid of breaking an ordinarily ignored law even in the presence of a common soldier. Elasticity of mind, meekness and the spirit of tolerance are some of the highest virtues because they lead to co-operation which is the foundation stone of all our morality. So naturally the progressive element highly appreciates and congratulates the



peace-makers for their adventure to England in the face of a high opposition and their service to the country. He bends down all his mind to them for their co-operative spirit resulting in a would-be, peaceful settlement, in one salutation. Of course, he is reasonably expected to criticize and that strongly and boldly the unprogressive and unco-operative elements; may be the Government or the wrong-minded public, individuals or combine, reactionaries or the non-co-operators, Hindus or Mohammadans, with fairness of mind and balance of judgement to the best of his ability. He is ever ready to fight out the causes of grievances of the suffered and the injured; will be thankful to those who offer suggestions for betterment of the conditions of life—healthy speculation is ever ready to invite constructive criticism. Lastly and briefly, he seeks co-operation between the constructive thinker and the productive worker. Everything is the product of intellect; the limbs cannot go without the head. Everything is possible in this world.

## XVIII. THIS MYSTERIOUS LIFE ON LIFE

What is life was the pet question of Edison—the inventor of gramophone, electric bulb and a number of other commercial products—to applicants who came to him for interview regarding some post in his company.

Life as it exists on the earth is found in various forms it occurs in the condition of creepers, in the shape of animals in the form of winged birds; as in man; besides it is found in plants. The animal kingdom is divided into two classes: the vertebrate or the backboneed and the invertebrate. The latter started life on the earth much earlier—millions and millions of years before the former were found on this globe.

Historically, the appearance and the growth of life is revealed buried in the form of fossils in the various kinds of rocks—fossils are the remains of plant and animal life of past ages in the form of bones, shells, fibres, stems, fruits, foot-marks, scratching and the like. As to the origin of life on this planet nothing is known with certainty, though a number of theories and speculations of the appearance of life had been advanced from time immemorial, and of these only two deserve consideration: the hypothesis of special creation or fixism, and the theory of organic evolution or transformism. According to the first one God created the different species or forms of life on earth: they were created as they are and they shall continue as they are. The study of the record of the rocks which were formed at different life periods of the

earth cast suspicion on the truth of this belief and led man to the observation of transformation of one species into another by the process of slow development through the courses of ages; and this conclusion finally ended into the belief of Organic Evolution—a different way of creation by a divine power. According to this conviction all species of life have grown through slow continuous processes of change from some very simple—probably structureless—ancestral form of life; and man developed from the fish. The study of the records of the rocks does not reveal any indication of the sudden appearance of life on the earth; it grew, changed and progressed more or less gradually and more or less methodically.

Life appeared on the soil of this earth, which is an effective mixture of air, water and matter continually played upon—from day to day—by sunlight, as protoplasm which is made a living thing by the presence in it of carbon, oxygen, water, nitrogen, carbon dioxide, phosphorus, sulphur, iron, potash and other earths and their combinations. Some theorists opine that life was transferred to this planet from some outside unknown worlds. Professor Lipman of California proved beyond all measure of doubt the presence of tiny creatures similar to those existent on the earth within the meteor which fell near Los Angeles in 1939. The microbes could withstand the temperature of minus 200 degrees centigrade for the period of six weeks in almost a complete vacuum. The fact ensures the existence

of life elsewhere in the universe. This world of marching on events moves in obedience to certain orders of nature and apparently the creation of life is subject to the regulation of certain cosmic laws.

Life is endowed with two characteristics: it has the power of assimilating matter, both living and non living, and of making it a part of its own life; and, secondly, it has the power of reproduction. In other words we eat and multiply.

The age of the earth is speculated—approximately estimated—by different geologists to be 2000000000 years from the time it separated from the sun. It took 400000000 years to cool to a stage when the first rocks called the Azoic rocks appeared on the earth. The history of this planet is the history of life, and therefore it requires description.

The record embedded in the Azoic rocks is estimated by geologists to be of approximately 800000000 years. These rocks do not contain any trace of life, though the signs of rippling waters and rain marks are found in these rocks. During the Azoic period the warm and shallow lakes and seas might have been full of lowly jelly like, shell less and boneless creatures and a multitude of scummy green <sup>ones</sup> had no hard parts and were not heavy enough to leave a trace of life behind in these rocks. Next in order <sup>is</sup> the Lower Paleozoic rocks they appeared after the Azoic rocks. They contain the traces of simple and lowly

life—a form of which appeared very early in these rocks. This life could crawl and roll it up into a ball as do plant-lice. Besides there are the shells of small shell-fish, the stems and flower-like heads of zoophytes, seaweeds, and the tracks and remains of sea-worms and crustacea. In the latter parts of these rocks are found the remains of scorpions. The next latest division of the Paleozoic rock is called the Silurian rocks. They are supposed to be 500000000 years old. They contain in them the remains of a fish which had eyes and teeth and could swim. These were the earliest, backboned fishes—the earliest vertebrate animals

The early world was a world of strong tides, currents, earthquakes, and other devastating visitations of nature; that was really an image of destruction. That is why we find so many remains of dead life buried in the rocks

The Mesozoic system of rocks came into existence after the Paleozoic era. The age of these rocks is supposed to be of more than 200000000 years. These rocks are full of remains of different forms of life, they contain remains predominantly of reptiles. This era came to an end some 80000000 years ago. The Cainozoic system of rocks followed the Mesozoic period. Some of the rocks of this system are as old as 80000000 years. The earliest of these rocks contain the remains of grasses which formed pastures, and the rocks of the later origin possess the bones and remains of birds, mammals and plants which were grotesque

and clumsy to look at, they yielded place to better looking descendants such as camels and horses, elephants, deer, dogs lions, and tigers—animals similar to those of today. In these early rocks the remains of monkeys and man are not found. In the rocks of the latest birth belonging to the third geological period of Cænozoic rocks occur the remains of different monkeys. They seem to have appeared some 40000000 years ago; and man appeared between a million and a half million years ago. Man is warm blooded as are birds and mammals, he belongs to the species of mammals.

So far we have been describing the origin, existence, the physical structure and the development of the body this is the historical picture of life on this planet. Now we come to the other aspect of the problem through its birth life is an incident. The earth came into its existence and separated from the sun through the incidental approach of a star that separated by virtue of its attraction or force of gravitation huge masses of gases matter which now revolve round the sun as nine planets. It was eventual, again, that the earth happened to attain these conditions of temperature, density of air, of atmosphere made of oxygen (which is essential for the existence of life) and nitrogen which dilutes the action of oxygen, and of the existence of plants which use carbon dioxide (which is suffocating to man) as their food. It is through the directive process of evolution that an animal—or rather a fish—has culminated in man. The birth of a boy or a girl, the birth of a child of good quality

or of bad one, the death and escape from it in an earthquake of so many people, fatal slips on hilly stations, conflagration, the clashes of cars, the collision of trains, and a number of other such occurrences, though apparently look accidental, are in reality incidental in nature—accident is another name for ignorance. No doubt, we have been making life increasingly deliberate. We have been succeeding in the avoidance of as many so called accidents as possible with the help of our brains.

Life is chemistry. The existence of life on this sphere is directly associated with the presence of the carbon atom—without this atom there could be no life—and the peculiar properties of the carbon atom, namely, the property of linking with other carbon atoms in the form of a straight chain or in a ring, the process of substitution, of addition, of isomerism, of polymerization and condensation with, no doubt, fermentation and hydrolysis, are mainly responsible for the chemical reactions which hold and grow the body and maintain life, our very body is made of chemical compounds in fact, it is a chemical museum—our bones are made of calcium phosphate, muscles mostly of carbon compounds and water, the hair and nails of nitrogenous substances, life persists by the chemical processes of fertilization, respiration, digestion, absorption, of assimilation and of metabolism, and the keeping of the body in normal condition largely depends upon the thorough understanding of these processes and upon putting them into practice, so much so that the very thought we think is

accompanied by a chemical reaction. The requirement of different food at different stages of life—childhood, youth and decline—throw some light on the chemistry of metabolism of the human body, for example, milk alone which is sufficient for the nourishment of babies cannot suffice and maintain grown up persons. Summarily, from chemical viewpoint, life appears to be a complex cumulative chemical process in which a definite order of reactions repeats to produce, says Brownell, the same results over a period of time, it depends upon series of chemical reactions the normal rates of which bear a definite relation to each other, and their disturbance causes various ailments and is responsible for a number of diseases.

From the standpoint of physics life is inherently electrical, it is likened to a battery human beings like a battery live within a definite range of potential.

According to Julius Huxley life is cannibalism man lives upon vegetables, fruits, milk and upon a number of other living things—he lives upon life. When he dies and is buried under earth the trees by their roots suck the essential part of his body, or microbes feed upon his corpse.

Another side of the problem is that life is a continuous struggle for existence, it is competitive in nature this struggle may be of claws and teeth ruled by the principle of might is right, which law is our jungle heritage, or, based upon the human values of duty, honesty, responsibility, justice and fair competition with wisdom and vision. A



strong well built and nicely developed body is better fitted to resist the attack of diseases and to successfully overcome the harmful and dangerous effect of happenings. Such a man is better equipped to fight out his enemies—whether they are the preying animals or the preying men. Even within us there is a continuous struggle between good and evil tendencies. A man of character strengthens himself physically, morally, economically and socially, which factors count seriously and powerfully in the keen battle of life. A developed brain can outshine his rivals and outthink his enemies and defeat them—Mohammad saved himself from being poisoned at the hands of a woman.

Life is made of instincts, and they are of two kinds: the low and the high ones. Greed, stealing, lying, polygamous habit are lower kinds of instincts—which we inherit from animal kingdom—while the bent of control over body and mind, chastity, love, sympathy, the taste of the study of different branches of knowledge, the sense of investigation and discovery; briefly moral, social and intellectual instincts are higher kinds of instincts. Obedience and co-operation are the positive and higher phases of human evolution, and not non-co-operation—not disobedience. The religious, family, national and international instincts are some of other ones. And an average man's life is guided by instincts, and not by reason.

Life is a business (the expression of business is used here in a scientifically enlightened and progressive sense),

and morally, socially and politically, since the very origin of life on this earth—from fish life to that of man is our history. The growth of a baby from infancy to manhood is a change; with the passing of years the development of its intellect is a mental change.

We are living in a new world; a world of change; a world of new conceptions. It is the age of originality. Change has become the law of life. What is progress after all? It has been defined as change of knowledge or "increase in knowledge"—this increase in knowledge changes our physical and material conditions of life; revises our social order; renews our moral outlook; produces in us a new mental attitude; in brief, it orders us out into new life. It is a happy sign of the day to notice the breakdown of the old reticence to change which has inflicted civilization for centuries. Self-preservation demands adaptation to new conditions. Many an institution has been entirely abandoned; many an organization overtaken; many a person discharged; many a kingdom toppled down; many an empire fallen; many a people vanquished and vanished; because of the ruthless charge of progress—the fall of the Roman Empire and the history of the Vanishing American (Red Indian) is well-known.

## THE MEANING OF LIFE

What is the meaning of life, or of the whole organic life? The answer to this question viewed as one whole, or as two separate parts of the same entity does not admit of easy construction because of its mysterious and profound nature. But the man who regards his life and that of his fellow creatures as meaningless is not merely unfortunate but almost disqualified for life, says Einstein. According to him life is social, of love, sympathy, of obligation, and of ideals of justice, responsibility, 'Beauty, Truthfulness' and of peace and of interest in research—by social he means living up to the standards established by the builders of civilization or men of genius for the welfare and guidance of human society. In the opinion of Vissarion life is a mission its end is not the search after happiness, but knowledge and the fulfilment of duty.

With the review of the historical picture of life in mind, the origins the methods of construction and the maintenance—which process means the manufacture and the distribution of energy—of organic existence are after all not life it is not a material object, nor is it the process of persistence of a million centuries but an activity. Man deserves the credit for the development of different branches of knowledge created for the express purpose of having a glimpse of the picture of the design and structure of life—which life may be likened to a wave on the ocean of the universe moving towards the never-ending ever-receding unapproachable horizon.

Life is essentially a struggle between evil and good. If one sides with one who is protesting against evil, the former is carrying out life's process when one casts one's lot with one who is engaged in a keen struggle against evil with the motive of fighting against it and conquering it, if possible—for evil is so very powerful such a man must be extraordinary one—the former, thus fulfilling life's aim, serves humanity. But when one favours evil, when one has lost the power of resisting evil—what to talk of conquering evil—life is dead, and where life is dead, chaos and anarchy get the upper hand.

In order to build up life the first and foremost point for consideration which would invite our attention is the search after the solution of the problem of evil. Religion is the study of human nature, said Mohammad. The success of our attempt for the dissolution of this riddle would depend upon the successful study of human character or human nature.

This discovery of the philosophy of human life naturally leads us to inquire after the nature of evil: What is the meaning of evil and what is good? The answer to this question, in the language of the common man, is that evil is an entity which stirs up our lower appetites and thus leads to the degradation of the human race and of human life by lowering its established standards of physique, morality, sociality and mental outlook and vision and checks progress. From evolutionary standpoint evil may be defined as the embodiment of animal instincts surging in man. The

abandonment of evil is the way to good—which good is the imbibition of human elements, desires and tastes such as of honesty, culture and justice—it consists in the preservation of present social, moral and cultural conditions of life, and in the contribution to the elevation of the current stage of civilization to a higher plane all factors, values, efforts, facts and fruits of search and research lead to the maintenance of existent human norms and to the uplift of human life embodied in what we call good.

From the point of human, worldly and practical consideration life is identically a play of characters. In this association man can be divided into four classes the dacoit, the thief, the beggar and the right minded and these different characters display their respective and distinctive role on the theatre of life. So the solution of the problem of our existence on this earth lies in the masterly grasp of the nature of these actors, and thereby, after the attainment of full control of the situation, a method is to be determined for the reform of the first, a way is to be found out for the control of the thief, a procedure is to be searched and adopted for the transformation of the third character from the state of a liability to that of an asset to the people of the State, and a path is to be chalked out for the production of conditions which would assure to the fourth kind of player the creation of facilities for thinking out his constructive schemes and putting them into practice without any kind of disturbance. As to the depiction of the character

## THIS MYSTERIOUS LIFE

of the highwayman, the present writer has been able to discover with his feeble powers some new ideas concerning this character described in his composition on Communism. In regard to the part played in life by a thief—a hypocrite, or a cunning politician—nobody can excel the master mind of Germany—Herr Hitler—who devoted about seventy two pages of his book, *Main Kempe*, in describing the behaviour of this character. In the judgement of Christ and Mohammad this herd of swine incapable of comprehending the importance of cultural, contributive and progressive values is to be buried (let the dead be buried) and let alone. Personal experience and experiments with this character prove beyond any manner of doubt that he is outside the measure of redemption, it is foolish and wasteful with him to utter brutal frankness which is used with the object of reform. Judicious silence pays in his dealings he takes undue advantage of the honest nature of the right minded whom he—as a debased believer in the economic theory of life—unscrupulously tries his utmost to strangle out economically with unemployment kept by means of his unfinishable cunning tricks from the juggler's bag. Regardless of the qualm of honesty or dishonesty, the fellow should be paid in his own coins killing evil and combating against it is no sin. Biologically, honesty or dishonesty, cunning or truthfulness are our means or instruments for living and a cunning fellow cannot give up his cunning nature because of his cowardly instinct of

self preservation From the standard of action and from that of practising Godly life he hypocritically exploits God and His institutions The next character is that of a beggar In this sentimental world of India where all kind of life is regarded sacred—the stray cats and dogs run about in streets, eat and enjoy multiplication, the beggars implore and breed without any kind of restraint—a writer would fear to write of the opening of beggar-houses away from the city where these fellows should be sterilized after the trial of an opportunity to them for a definite period for rising above this derogatory stage to a better one nations are not built on the foundation of sands

What a pity! that an average man does not understand the significance of human life—that his life is different from animal one, that he is a cog in a well knit, social and responsible organization, that his life is that of honesty, justice and responsibility; of character; that his is contributive in nature; that it is an art of changing the direction of the sex energy into that of constructive doing and acting, constructive planning and thinking

What is the object of an individual's existence as a sound brick in the construction of human edifice? Obviously, it is the realization of his obligations and the demand on him for the performance of his duties requires knowledge or education which aims at building up a better human race As an obligee for enjoying the

privilege of human society—which society is different from those of animals—produced by the painful and laborious efforts of the men of genius of ages, he is expected to fashion his instinctive actions into obedient, deliberate and responsible ones, particularly, that of marriage—which at first, enjoins on him as a responsible member of human society, the observance of the higher standards of life by which is meant wants more important than marriage and family. So, if he marries at all, he does so on the basis of some principle, and not on the standard of expediency or on the much worse customary standard of sex gratification. Besides, the individual is under indebtedness, from the point of view of the purpose of his existence—which is to help and live in accordance with the process of life—to leave behind him, on the basis of absolute honesty, children who are physically, economically, morally, socially and mentally superior to their parents, and only thus he can claim to have earned the credit of the achievement of success in life.

The aim of human life is to share the attempt for the creation of the conditions of happiness founded on the satisfaction of conscience or the establishment of the Kingdom of Heaven. Such a Utopia can be brought within human grasp by the application of the principle of heredity, by the spread of right kind of education—which means rich intellectual environment—by the legislation of progressive laws and by giving a new social, moral and



intellectual spirit to the age which would lift the present stage of civilization to the next higher rung of the endless ladder of life—when reason reigns

So we are all socially and morally—regardless of nationalism—bound not to let civilization slip back (all the great personalities devoted their lives with pleasure to its uplift regardless of any reward or consequences) and to leave this world a better one behind us than the one we found it on our entrance This is the Meaning of Life

## XIX. NON-VIOLENCE

The world has come to this stage of life through evolution and mutation or revolution it means through the processes of slow growth and sudden change. The change of the use of the brutal force to that of reason and gentleness in the regulation of human affairs traces the path of evolution, the former could not be dispensed with all through these ages. But, unfortunately, gentleness on the testimony of the study of human nature has often been mistaken for weakness. The growth of civilization has been leading us away from the philosophy of the use of force, which is our jungle heritage descending from the remote period—when we used to walk on our fours, when we sought the utter destruction—for the fear of our own safety—of our animal enemies. This impulse persists in us even now in our conflict of daily life, as well as in our national and international affairs the presence of armies and navies is a direct proof of the existence of the spirit of violence—which impulse is one of our primitive powerful instincts. Many executives who regard humaneness as timidity would look upon this essay as a mere sermon of idealism aiming at the impossibility of lading out the water of the Indian Ocean. But every thing is possible in this world. Life consists of difficulties, and they demand solutions. The progress of any individual, nation or humanity depends upon disentangling the knotty problems of life. The conquest of difficulties is success. The treatment of gentleness or

non-violence requires the solution of our problems through the method of persuasion—by the appeal of deed, reason and intellect (A gentleman is one who tries to make a bad man a good one) The greatest apostle of gentleness or non violence was Jesus Christ who turned the other cheek for another slap as a forward step in the process of life in order to convert discriminatingly the dacoit—and not the thief—and this principle of turning the other cheek for the slap can be developed on a large scale against the aggressively organized people But other things likewise, say, glass, in the days of Christ was melted in the batches of pounds

Gandhi led by the instinct of self preservation was charmed of the glamour of non violence expressed by Tolstoi in his *Only Means* He was an implacable conservative Hindu, whose notion of life was that of defeat whose movement was a revolt against Western modern influences in fact, he was the greatest reactionary ever born in human history; he would return the masses to the primitive days of small hand fitting tools, of spinning weaving and manufacturing things in self governing villages, he would break machines to pieces, would discard artificial foods, and would disband cities But with the advance of time on the realization of facts he would take political somersaults from the reversal of industrial development to the industrialization of the country; from his belief in keeping caste system to that of

its removal. Nevertheless, he deserves the credit of bringing the idea of non-violence as a political weapon to the notice of the world for its serious consideration, and of filling in the gap of any national political programme. The process of non-violence, no doubt, does exist; though it has not been even stumbled upon—the door to its buried treasure still remains undiscovered. It requires its exponents and propounders, discoverers and inventors for its development.

Non-violence is expressed in the obedience of laws which are the necessary consequences of human development and organization. With the growth of civilization they have been changing—made, remade and unmade—and would be changing. It was some man of genius who made these laws to establish, regulate and standardize human social relationships; after him another one sifted and augmented them according to the change of circumstances—Napoleon was one of the men of geniuses. The smooth running of Government depends upon the wisdom that lies behind these laws and upon their thorough understanding. It is the spirit of the law—and not the letter—which is to be observed; the letter is merely the way in which the spirit is presented. Andrew Carnegie often promoted the man who had the judgement of breaking ironclad laws. A rule becomes a hobgoblin when the executive ceases to see the facts and tries to adopt circumstances to laws. Telling industry—which

is the result of thinking—is the basic industry: education, judicature, administration and execution and journalism come under this industry; while agriculture, transportation and communication, and manufacture of things are dependable industries.

## XX. ON SCIENCE

What is science ? What is the meaning of science ? What are the aim and object of science ? and what are its uses are interesting questions and worth inquiring ? Science may be defined as a philosophy of life based upon experimentation—a huge telescope when turned towards the moon reveals the fact that this heavenly body is a planetoid Science means the study of the universe—which universe consists of five basic elements energy, space, matter, motion and time—which absolutes are simple in appearance, but are really too deep for comprehension, the aim of science is to find out the relationships or laws, or principles that bind the above mentioned five realities, and the object of science is to draw out and construct the picture of life—which picture has proved too big for science, poor science has so far been able to present before us a dim corner of the edifice of life The uses of science in everyday life are manifold, but its most important application is shown in the improvement of our material conditions of life—the improvement may be of our bodies, of our food, of our housing, of sanitary conditions, of business, of the means of transportation and communication by the inventions of steam locomotives, gasoline engines, aeroplanes, telephone or wireless telegraphy, it changes our social order by the discovery of new ideas, it thus renews our moral outlook, it in this manner reshapes our mental attitude and revises our ideal or spiritual conception of life—in brief, it revolutionizes

our character.

**Energy.** It is one of the five fundamentals making the universe. It is that which enables us to do work. Energy is of two kinds: kinetic and potential. A body is in motion by virtue of its kinetic energy; a stationary object which is capable of doing work is said to possess potential energy. Energy may exist in any of the following forms: heat, light, sound, magnetism and electricity. One form of energy can be changed into another and vice versa.

**Space.** It is characterized by three dimensions or directions or three planes: vertical plane, east to west and north to south planes. It is sparsely populated by heavenly bodies. A photograph taken during the period of the sun's eclipse shows the bending of rays—which fact means that space curves near huge material bodies such as the sun. So space is the property of one of the primordials—it can be the attribute only of energy. If energy condenses into matter it means space decreases—there is no regular or experimental proof for this phenomenon; when matter disintegrates into energy space would increase; and matter does undergo disintegration, and change into energy on the assimilation of food in the stomach, in the case of radio-activity, in the bursting out of an atomic bomb, and it is said that the matter of some of the stars of the Milky Way is breaking and transforming into energy. It appears inherently the universe is both extensible and contractile, though at the present stage of

its evolution it is expanding because more matter is transformed into energy than the amount of matter formed by the reversible process, and the expansion of the universe is supported by the evidence of the receding of certain stars at terrific speeds seen from the shifting of lines in their spectra. Theoretically, space is the property of energy in correlation with matter; experimentally, there is no proof for the support of this hypothesis. Again the tendency of space to undergo curvature in the vicinity of large celestial spheres points out to the existence of its limit, though space is indisputably boundariless.

**Matter** It is known by its virtue of occupying space and possessing weight. Matter is electrical in nature, it is ultimately composed of extremely small particles such as are electrons, protons etc.—the electrons are negatively charged with electricity and protons are positively charged both possess weight. Recent experiments prove beyond doubt that matter is concentrated or condensed energy.

Matter exists in three states gaseous, liquid and solid. All these three states of matter are under ordinary conditions of atmospheric density and temperature made of molecules which differ in having large interspaces between the molecules of a gas than those between these small particles of a liquid and the distances between the molecules of a liquid are greater than between those of a



solid. Another difference between the three states of matter is the amount of energy they possess the gaseous state of matter has more energy than the liquid one, and the liquid state of matter appropriates more energy than the solid one. So one state of matter can be transformed into another one by the addition or removal of heat.

Matter can be divided into two classes the living and the dead matter. The living matter is recognised by its virtue of sensitivity, growth, assimilation and multiplication, while the dead one is not sensitive, it does not grow; it does not eat, it does not breed.

**Motion.** This one of five realities is relative. In this case the body possesses kinetic energy and is subjected to the laws of motion. But the meaning of motion is as deep as that of the universe itself.

**Time.** This basic element is also relative. It may be defined as the duration of the repetition of a process which consists in the repeatedly and periodically coming of a definite position of the earth face to face with a far distant star—which time is bottomless and immeasurable and not so easy to understand as expressed here. Our earth is our master clock, it rotates round its axis once in day and night in exactly the same period. All the other clocks and watches are indirectly regulated to it. The velocity of light which is an absolute—the velocity of light from different sources, whether they are moving or not, whether they are at the same or different temperatures,

under all circumstances, is the same—can be used as our unit or standard of time. Time is an irreversible process, it is an unilateral ever moving-forward identity.

The end of this discussion is that energy is the real primordial and the rest of the four elementary things, namely, space, matter, motion and time are derived fundamentals.

**Branches of Science.** Biology, Physics, Chemistry, Geology, Astronomy and Mathematics are different divisions of science based upon the principle of the Division of Labour and of specialization. Biology studies the living matter and its behaviour, physics deals with different kinds of energy, motion and the laws of motion, chemistry finds out the composition, formation and transformation of matter, geology tells the history of the earth, and reads out the story of the appearance of life and its evolutionary growth from the pages of the book of fossils found in different layers of the earth formed at different geological periods, astronomy sees the heavenly bodies and explains them, and penetrates the depths of space, and mathematics picks up the thread of the study of the universe whence astronomy refuses to work.

Science is relational and classificatory, it treads the path of classifying facts, and of reasoning upon them to ascertain truth, of teaching honesty by practice, it studies the panorama of life with common sense and of material-

ism with a cool, orderly, serene and unprejudiced mind. Being pragmatic in nature (it draws conclusions from practical results) it looks into the true perspective of objective facts with its two universally applicable instruments of reason and sensation. In its industrial application it is reversing the process of nature in order to make energy available for man. And the man of science is by inference objective, impersonal, amenable to reason, observant, sensitive, disciplined, significantly informed, critical, tolerant, intellectually patient (can suspend judgement) constructively imaginative, deterministic, behaviouristic, fearless in facing facts, courageous in the defence of scientific facts, unimpressible by authority or prestige, intellectually unconventional, unegotistic, and with faith in law.

There appears to have been too much undesirably boisterous and disruptive noise in the world in regard to science and religion as if *inherently* they are irreconcilable antagonists pitched against each other in a sanguinary combat—of course, in the illusioned minds. On the other hand, with the man of scientific spirit there is no such difference existent between them: he sees in both unity of purpose aiming at the same result, though with their own characteristic approach. Both of temper are ascetic and monastic, they believe in discipline and control of impulses, both with equal rigors and self-imposed restrictions call upon the repudiation of the flesh.

and the devil. Practically, in this materialistic age the serious men of science are the only profoundly religious people.

According to the scientific conception of life man is a biological and social product of evolution; and from this viewpoint he has advanced from lower to higher level of civilization (which depends upon inventions). The attempt to understand him in the present necessitates the investigation of his past; which study helps, in addition to various other advantages, to plot his future course.

## XXI. ON BRAIN

### Introduction.

Historically, the brain has developed through evolutionary process as has the rest of the body or the life itself. In the lowest form of life, say, in the sponge, there is very little nervous tissue. At its next higher stage of life than that of the sponge is the sea anemone with a partly developed nervous system, but it has no central station—the brain—though it is conscious. First were the muscles, then the activating nerves, the sensory nerves and last was the central brain. This way has been the evolutionary order of nervous development.

The next stage of development of the brain was in regard to size and weight, human brain is larger and heavier than that of an elephant comparing their magnitude. The brains of a child and a monkey are smooth—they are not fissured as is that of a man—and are at the same stage of intelligence. So the further turn in the development of the brain was in the formation of fissures which divide it into compartments which are said to be associated with different faculties of the brain. The development here has been in the direction of compactness—in the systematic arrangement of living cells—and some of the abnormally large heads are diseased brains while unusually small ones are arrested ones.

*By circumscription the brain forms a part of the head*

and is placed under the cranium of the skull On dissection of the man's head it looks a lump of grey matter of elongated shape rising from the sides to meet the upper surface which in man's case is ruffled and wrinkled, when felt it is soft and smooth and yields to pressure

Biologically it consists of different living cells which are fed by the circulation of blood The brain is made of two parts called the hemispheres On the surface of man's brain there is a network of fissures which form compartments, while the surface of the brain of a child or that of a monkey is smooth without any folds

**Mental Faculties** Intellectually, brain is made of different mental faculties attention, power of understanding, memory, power of distinction, curiosity, power of observation, originality, resourcefulness, analysis, synthesis and imagination

The first three faculties are mainly concerned with the process of learning or imitation, and an average man learns through imitation, learning has been the process of life in the earlier stage of organic evolution They are developed in different individuals to different extent—some are more attentive by nature than others, some grasp more quickly the viewpoint of their superiors than their fellow workers, some draw the meaning of a written matter correctly and others do it differently either because of their different mental attitude or of their different

emotional character, some have a weak memory, and others possess a strong one—the author noticed a man who would remember a story as long as he was in the picture-house and would forget it as soon he would come out of it. Memory may be temporary or retentive; some can remember a fact for a long time, and others forget one after a short period. Training or disciplining memory is payable and desirable process from the point of view of ease in learning and that of passing examination, it consists in bringing the operation of memory under the guidance of intelligence in preference to its blind use, the use of the idea of association, the application of a rule to a number of cases, the remembrance of certain key-points help a great deal in the matter of memorizing facts and their recollection. Ease in learning is the quality of the mind resulting from the combined effort of the highly developed power of attention and of understanding, and success in examination mainly depends upon the development of these three faculties, and to some degree upon the ability of expression which requires sufficient command of the language.

The next quality of mind in order of importance is the power of distinction. It is the capacity of an individual for drawing a right or wrong conclusion on the expression of opinion as the result of his mental attitude born of his intellectual environment. Example is better than precept—the author noticing an Indian student in the United States stick to the same class for about seven years sympathized

with him, advised him to give up studies and do something else • he turned against the writer, while an American woman whose elder son was a few years younger than the sympathizer acted upon his opinion in a similar affair after it had been expressed on asking The former had no power of distinction, the latter possessed it developed to a remarkable degree

Curiosity and power of observation are two other faculties of the brain The former one is of three sorts the first one deals with the enquiry of information from the standpoint of learning regarding ordinary things of daily life just as does a child for example, the second one is that of slavish mentality which inherits legacy of fear and suspicion as the result of cowardly instinct of self-preservation and suffers from the habit of diseased inquisitiveness tantamount to prying into other persons' affairs, the third one which we are here chiefly interested in is serious by nature and is pioneered by the power of observation which consists in the deep cognizance of the occurrence of strange behaviour and action of objects under a certain set of circumstances For example, Newton was richly gifted with them while sitting in his orchard under a tree the fall of an apple came under his power of observation and thereupon his curiosity was raised to inquire why the apple moved towards the earth and did not go towards the opposite direction away from our globe Millions after millions of people had passed before



Newton, but none before him asked the reason for the fall of a fruit from a tree. Why? The answer to the question is that scarcely a genius was born in centuries, secrets of nature are many, but observers on the roadside of life are few. This observation of Newton led to the discovery of the law of gravitation. Again, on looking at the face of the Jewish woman at her strange behaviour, Mohammad found out that the food she brought for him was poisoned and thus through his power of observation and curiosity he escaped death.

Originality and resourcefulness are two other important faculties which go side by side. The former one is defined as the quality of conceiving a new idea, whereas the latter is the ability to take that idea and develop it into a working concept. For example, when as a boy Henry Ford was working on the farm of his father near Detroit the idea occurred to him that there could be a machine which would till the land, reap the harvest, bind the sheaves, thresh out corn, sack grain and haul it at forty miles an hour in trucks to the market and thus emancipate man from age-old drudgery. Henry Ford was not only original, he was also equally resourceful and he succeeded in making machines which did put his idea into operation—Ford tractor and Ford car are known all over the world. Another example of the combined gift of originality and resourcefulness is that of the construction of a sound-absorbing wire-gauze installed in windows of different

storeys of large buildings in busy quarters of the city of New York against the entry of sound into offices from the clattering of street cars or tramways the hooting of horns and from the various other sources of din in the streets below This invention, the endowment of originality and resourcefulness delivered men in offices from the demon of paralysing disturbances

Imagination is a wonderful quality by virtue of which we can foretell the eventualities of the future Its power of predicting is based upon the observation of certain facts and on the realization of certain dynamic forces, for example—with failure—at least partial—in his attempt after the experience of operation upon the minds of the top most Indian leaders for more than fifteen years to shake them off their sophistry and perverse principles the author naturally came to the conclusion or observed that reason is scarce, and therefore imagined of the inevitability of war more than one and a half years ago (26 1-47) Imagination may be diseased one, it is based on wrong observation It may be constructive one its foundation is sound Vision is higher imagination, it is the capacity to follow or make a short path to the road of life

Synthesis is the ability for formulation, it is the capacity for defining terms In history the faculty of synthesis in its highest form of development was found in Socrates

Definition means stating the precise nature of a thing in a clear, expressive and concise form. The importance of this quality is realized from the fact that so far science has not been defined, we do not know the definition of sleep. The author noticed a Member of the British Parliament write on 'A Great Man', and after spending a thousand words he expressed at the end his inability to define a great man. When we converse on a subject by starting with a definition and its acceptance, it means we start for discussion and reach a conclusion, and nip controversy and useless argumentation in the bud.

The faculty of analysis is quite different and in reality is opposite in its working to that of synthesis, it is no less important than synthesis. Its first function is refinement, it explains clearly, concisely, expressively and illustratively the meaning of a formula or definition of a term. For example, in scientific literature there was a great deal of confusion between diffusion, effusion and osmosis. It was Professor Washburn of the University of Illinois who after analysis of the riddle cleared up the entanglement. It makes suggestion for the improvement of an organization. To illustrate, in the British system of government the power is concentrated in the hands of a few—the Ministers or Members of the Cabinet—on the principle of quick performance of work to the injury and resentment of the democratic sense of the other Members of Parliament. A step further as to the concentration of

power for efficiency would lead to dictatorship. This system can be modified and improved by first dividing authority into independent execution and administration on the principle of the division of labour, and administration can be more efficiently and democratically carried out by the formation of different committees under the direction of a Vice President and President *ex-officio*.

## ON THINKING

Anyone through his personal experience as a university teacher can find out that our students are stagnant, and do not think freely. To illustrate what is meant by free-thinking it would be best to quote a conversation from the Upnishids—the son of a Brahman after finishing his studies comes to king Sadhana and he asks him :

“Say, Brahman, have you finished your studies ?”

“Yes, Maharaj, I have studied all the Vedas and Shastras. My guru is the most learned pandit in the country.”

“Then you must be knowing what happens when a man is dying.”

“No, Maharaj, I have not read the answer to the question anywhere; I will go and see if my guru can,” answered the Brahman.

His guru also could not answer this question and both of them came to the Maharaj for the solution.

“Yes,” said the Maharaj, “this is the difference between the son of a Khastria and the son of a Brahman.” And then he explains what happens when a man is dying. It means simply that the king, Sadhana, used to think freely ; while the Brahman used to memorize books. The same is the difference between the East and the West—they invent movies, that is, cinemas, which besides

being a good record of history, is a source of present day information and recreation, while we point out at their manners without understanding the evolution of the West. The man of science realizing the scarcity of food and of place for the increasing population, thinks of utilizing the energy from the disintegration of atoms or from the sun before which the energy of the waterfalls is insignificant, of producing synthetic food from carbon hydrogen and oxygen from the nature, and of building up houses in the air supported by magnetic forces and distributing food by aeroplanes, while we minimize his intellectual efforts by saying that our forefathers discovered it. In the Western countries, the ceramist makes toilets sewer pipes, drain tiles one simply sits on the water closet, pulls down the chain and the whole waste material is pushed by the flush of water to the storage where the chemist removes smell by means of chemicals, and the water and the waste material are separated by means of sieves which are every now and then lifted up electrically to throw the waste material in a side tank where it is burnt to ashes. While we are still fighting over the question of untouchability—of course, our caste system is of racial origin, Verna means colour 'The colour of a Brahman is white and the colour of a Shudra is black' is a quotation from the Mahabharata. Returning to the point, they make machines, we learn to use them they write books we read them, they make medicines and chemicals we buy them. Examples after

examples can be multiplied to show that they think, freely and we do not.

There are incidents in life which give opportunities to men of intellect to make observations. Such was an occasion when a colleague of the author came to his house. He discussed with him, at least, for an hour on different subjects, and thereafter left the place with the writer's servant with him. Almost reaching his house he remembered that he had forgotten to hand over an ordinary thing to the present writer, and returned. When he handed over the article, the writer asked him why he had not given it to the servant who could bring it to him and he could save so much time and trouble. "I could not think," was the doctor's answer. It reflected on the mind of the author at the occurrence of this incident that human beings without the capacity of proper thinking waste time, energy and money. Again, when one day we were taking tea in the afternoon, the nib of the pen of the author broke, leaving one of the pointed ends remain standing. It occurred to him that the nib even then could write, and smilingly remarked what had passed in his mind. The doctor could not believe that a broken nib could ever work, and when he went on insisting upon his opinion the author got up from the chair, took a scissors lying upon the mantelpiece, cut the pointed end which was standing equally with the broken one and began to write—the result of an act of thinking. Another

example illustrating the meaning of thinking is the description of an incident which took place with a different colleague : we wanted to prepare a programme of work—it was to be a new original time-table different from the one used in other colleges—for our new classes, she expressed her desire to prepare it and the author without hesitation agreed to it, she brought it—prepared with the help of others—after a few days with the periods on it starting from eight o'clock in the morning to six o'clock in the evening. The author, of course, could not agree to it, and suggested that the periods could finish at four o'clock. She would try again, and the proposal was accepted with pleasure. She fetched the routine of work after a few days with little improvement in it, and the author was asked to prepare one to the specification.

He placed the efficacious time table next day before her and explained it to her amazement he also, at that time, tactfully introduced a remark concerning the selection of two teachers for the English department pointing out that the difference of opinion between the two members of the staff could be avoided by the selection of two women teachers instead of one man and one woman. At this she got up from the chair in excitement, banged her hand against the table, and uttered "Could I not think so simple a fact?" She moved away into the corridor in her emotional mood and soon after returned to resume her work. An example after an example can be piled upon to explain the significance of thinking, but the



author would be satiated by citing one more illustration for the purpose. He noticed a news—a circular by the Director of Public Instruction—in a newspaper concerning students and colleges. It did not apply to us. It flashed across his mind that his colleague or his colleagues would take it for granted that it applies to us also. In the next meeting he found out exactly happening what he had already imagined. Of course, he had to explain the reason to their conviction.

But as far as the author's experience goes people tend to remain self conceited, undisciplined and unprogressive because they do not realize the importance of thought. Thought is dangerous! it is dreadful! So away with thought—away with leadership; away with self discipline, away with progress.

Russell in his *'Principles of Social Reconstruction'* writes upon the explosive power and importance of thought. "Man fears thought as they fear nothing else on earth—more than ruin, more than even death. Thought is subversive and revolutionary, destructive and terrible, thought is merciless to privilege, established institutions, and comfortable habits, thought is anarchic and lawless, indifferent to authority, careless of the well tried wisdom of the ages. Thought looks into the pit of hell and is not afraid. It sees man, a feeble speck, surrounded by unfathomable depths of silence, yet it bears itself proudly, as unmoved as if it were Lord of the Universe. Thought is

great, swift and free, the light of the world, and the chief glory of man'

'But if thought is to become the possession of many, not the privilege of the few, we must have done with fear. It is fear that holds men back—fear lest their cherished beliefs should prove delusions, fear lest the institutions by which they live should prove harmful, fear lest they themselves prove less worthy of respect than they have supposed themselves to be. Should the working man think freely about property? Then what will become of us, the rich? Should young men and young women think freely about sex? Then what will become of morality? Should soldiers think freely about war? Then what will become of military discipline? Away with thought! Back into the shades of prejudice, lest property, morals and war should be endangered! Better men should be stupid, slothful, and oppressive than that their thoughts should be free. For if their thoughts were free they might not think as we do. And at all cost this disaster must be averted. So the opponents of thought argue in the unconscious depths of their souls, and so they act in their churches, their schools, and their universities''

Thought is unique—it is unique because it cannot be placed in any of the realities, namely, energy, space, matter, motion and time. Thought belongs to a different system of order: it has got no weight, it occupies no

space, it has no force to move a body at rest or bring to rest a body in motion, it possesses no motion, no shape, and it stands aside from time

Thought is an epitome of natural evolutionary method, it has evolved from impulses, emotions and instincts which are responses to impinging stimuli. Thought is subject to the evolutionary process of change and development and selection. At a lower stage of life, say, in animals, all physical actions are instinctive, but in the higher life of man—particularly in the case of a man of genius—most of his actions are under the guidance of thought.

Thought cannot be located in any part of the body, it has no location either in time or space. Thought is expressed by words which are substitutes for objects and situations, words are concise forms of our actions and behaviours, and give rise to actions. While words are formed by the muscular efforts of several organs—larynx, chest, throat, face—and the behaviour of the viscera on their performance of work obtained from the expenditure of energy. In order to see whether thought is right or wrong the necessity of performance of experiments arises and from the results thus obtained the accuracy or inaccuracy of thought is judged.

Ross Purdy, the Secretary of the American Ceramic Society, tried in one of his editorials on Moron<sup>1</sup> to direct the attention of the professors concerned of the

different American Universities towards explaining the importance of thought and thought-producing habits to their students and warned them against the admission of morons in colleges. "It is not possible," says Purday, "to develop vision and productive thought habits in morons. Morons are incapable because of mental laziness and want of judgement. Morons are not idiots; they simply lack the capacity to think beyond the thing immediately in hand. They often have excellent memories and can creditably do routine things. If perchance a moron has met all the technical requirements for admission into an advanced school and met the technical requirements for a collegiate degree he will still be a moron incapable of origination and be wholly without vision of the possible use of the information he has. His only thought habits are of registration without power of assimilation and constructive origination. He is without capacity to make application. He is too lazy mentally to analyze, formulate and to conceive. He might trace very creditably but never would he be a good designer. He could not vision the working relations and assemblage of parts.'

'Altogether too many morons and near morons get through college and too many, through lack of interest or because of being misfits in their chosen vocation, slip into moron thought habits. It is a struggle not to degenerate into a moron.'

'It is only by continued practice that any of us obtain and hold ability to think constructively along a particular

line There is a loss of hold, cunningness and inspiration if for very long one discontinues constructive thinking. An expert is one who is actively and all the while studying and conceiving on a single task, and the fellow is a rare genius who can produce to his possible maximum on several tasks requiring distinctly different character of basic facts, thought procedures and objectives. Specialization is necessary to obtain maximum productiveness. The further scattered and the less definite in thought, the nearer like a moron one will grow to be "

## XXIII. POLITICS AND POLITICIANS

The character of a politician can be better explained by illustration rather than by description. Sir Richard Acland, one of the Members of the British Parliament, believed in peace, was convinced that the war could be prevented and stopped at any stage of its progress if other Members had taken their responsibilities seriously. I held the same opinion and expressed it in one of my letters written in the beginning of 1940 and unfortunately had the same experience. They held their peace and allowed personal considerations to stand between them and a frank statement of their real views. With the object of avoiding this disaster he approached other Members of Parliament, about sixty in number, and discussed his views many times with these Members of other parties. They agreed with him. But at the time of the question of acting they would forward various pleas. One of them, however, was more straightforward than others, and said, "And, lastly, of course, my dear Acland, you appreciate I would lose my seat, and I rather feel I have more influence in the house working quietly behind the scenes." My dear readers, you appreciate our Gandhi, according to his own statement, would not act in accordance with truth because he could not afford 'to lose his donors.' Such is life.

A politician is neither a statesman nor a superstatesman. He is a politician and nothing more than politician.

To all appearances politics is the department of fooling the people. A politician's life is that of popularity. In his own profession he is often a failure. He makes trade of politics. He struggles for power, begs, borrows, steals, extracts, squeezes and bowdlerizes ideas which he uses as counters in his favour to make his position and when failing and falling he manipulates all kinds of devices to hold his position, sometimes even debasing religion by exploiting God and His Institutions. Lenin and Stalin, Hitler and Mussolini were not politicians. A politician's life is led by the instinct of self preservation and not by that of adventure. So he cannot afford to be unpopular. That explains why he cannot publicly praise any person, how great may he be, if he does not agree with him, and would not meet him in order to avoid inevitable facts. Politician's life is that of popularity. So he goes on self glorifying and self-dramatizing, and incites others to advertise him. He knows that the crowd by nature is traditional and conventional. So he does not go against tradition, convention, neglect and indifference. He is always anxious to keep and increase his prestige. For the purpose he would intimidate with his political tricks and influence. The politician finds some charming formula. he uses some senseless catch phrases again and again working on the suggestibility of the people. The catch words of our politicians with which they hypnotize the innocence and the simple minded are Pakistan, truth, non violence, democracy,

poverty, sacrifice and oppositely he uses the phrase of arm chair politics and philosophy in place of sacrifice. For the sake of popularity he 'winks at flagrant injustice and oppression and passes an absurd law at fanatical agitation or to please the majority. He is a self conceited sentimentalist so naturally so cruel. He is a patriot as long as his personal interests are not touched. When successful the orator demagogue sweet tongued politician is out infatuated with power, lives in the glory of his life, is in the height of his passions.

As long as politicians do not practise Darwin like honesty, peace cannot reign on this earth. On receiving a letter from Wallace containing the same ideas as his own manuscript did, Charles Darwin was deeply disturbed by the problem it posed regarding his honesty. How could he now publish his own findings without seeming to have stolen the distant scientist's ideas? In Germany this habit of stealing ideas by opportunists, demagogue and kleptomaniac politicians led to the development of a fanatical, aggressive and intolerant ideology which caused revolution and then the War. Such an ideology was sponsored by its authors as a remedy—no doubt, savage and uncultured—against short sighted, arrogant, worldly wise and clever politicians.

We have seen much of politicians. What we need is not a statesman, but a superstatesman, a political genius who can float this old ship of our INDIA sinking for the



last thousand years and can steer it through difficult waters not only of the present but of the future—a new more threatening ideology than established before in Europe is in its embryonic state—to some destination of safety. What INDIA needs is new leadership with new programme, new theory of life, new theory of politics, with new theory of Government.

No movement will ever succeed unless it is based upon right thought. In this connection we must not fail to recognise the basic principle that different peoples are at different stages on the scale of civilization. Therefore they should have different forms of Governments. What we need is responsible Government with responsible leadership.

Man's destiny has been governed by the sense of novelty and the force of habit, and, unfortunately, Mr Gandhi's by the latter. The idea of non-possession remaining naked, eating of raw grains—our equilateral tendencies—are the forcible recalls from the past when our progenitors, say the apes, had no property to distribute, no clothes to wear, no means to cook, no money to use, when they drank at the same pool, ate the same fruits, slept on the same ground, when there were no clocks, no time record, no season measure.

Democracy means choosing a leader by the man of street. If the Commander in Chief be allowed to be

chosen by soldiers, the Admiral by the rank and the file of the Navy, and the ship Captain by seamen and the crew their fate can be safely predicted. Thus argues an Englishman. Democracy has more or less been successful only in those countries where the masses are obedient by nature, are well-disciplined by instinct, are wise enough to follow and to understand the wise, but in India in the face of such appalling forces of stark ignorance of reaction and of degeneration, freedom is to be defined with a view to protection of the simple-minded and the innocent from the hands of hypocrites and the eccentricities of fools.

Democracy is, no doubt, virtuous. But it is not above criticism. It is extremely slow and wasteful. If progress is ever growing democracy cannot be the last stage of Government on the endless ladder of progress.

In these days the evils of democracy are on the throat of the virtues of democracy, and it is falling to pieces everywhere. Democracy is a movement which is in the making. It may live or die depends upon the character of the people.

We are living in a new world; a world of change; a world of new conceptions. It is the age of originality. Change has become the law of life. What is progress after all? The change in knowledge or increase in knowledge which changes our physical and materia

conditions of life, revises our social order, renews our moral outlook, produces in us a new mental attitude—in brief, it orders us out into new life, and this is called progress. It is a happy sign of the day to notice the break-down of the old reticence to change which has inflicted civilization for centuries. Self-preservation demands adaptation to new conditions. Many an institution has been entirely abandoned, many an organization overtaken, many a person discharged, many a kingdom toppled down, many an empire fallen, many a people vanquished and vanished because of the ruthless charge of progress—the fall of the Roman Empire and the history of the vanishing American (Red Indian) is well-known. Reaction and wrong-mindedness cannot catch the signal-danger; they always run after the mirage. So it no longer remains a matter of choice. There is no standing still in our system of life.

## XXIV. PATENTS AND COPYRIGHTS

**Introduction.** Whosoever may he be who first thought of the law of patents was a great benefactor of humanity. It was first introduced in Europe, most probably, in one of its northern countries, may be in Norway, by some genius who could observe that the security and the advance of civilization depends upon the protection of the rights of originators at the hands of thieves of ideas and inventions. Thus he secured for them the exclusive rights for their writings and discovers for limited times. Before that inventors would not disclose the secret of their inventions and would often die with them, the world lost. In Britain patents were granted in 1617.

Upon this moral and intellectual principle the patent system has been erected. Its main object is the welfare of society, secondly, it protects and encourages those who contribute to the welfare of society and advance civilization by making some substantial discovery of invention in any of the useful arts or in material advancement and thus extend the boundary of knowledge. The inventor is considered to have given to the public something of real value and the public in return to receive the benefits of that invention confers extraordinary privileges upon him through the Government, its representative.

**What is a Patent.** A patent is a contract between the inventor and the Government, the representative of the public. By the terms of the contract the inventor

discloses facts about his invention and what it accomplishes to the public, and the public in return, through its Government, gives the inventor the right to exclude anyone from making or selling his invention for a definite period of years. At the end of the period his exclusive rights to his invention cease, the invention becomes public property.

**What is Patentable** The invention and discovery of any new and useful art, machine and manufacture, or composition of matter, or new and useful improvement thereof, which has not been known, used, patented or described in any of the printed publication in any part of the world, is patentable.

It is clear that patent must show invention. It means creation rather than development. It must be something new, it must be useful. Mere change of form, a slight advance made, every trifling device, 'every shadow of a shade of an idea,' every dependable thought of a basic idea, does not disclose patentable novelty and therefore cannot be patented.

An invention which is considered injurious to the welfare of society cannot be patented. Thus, a device for burgling into the houses of others cannot be patented.

A book is new because of new ideas it contains, it is new because of the new and improved arrangement of matter; it may be regarded new from the viewpoint of

the new mode of expression, thus old ideas might have been made clearer.

Patents are granted upon arts, machines, or articles of manufacture, processes, compounds, designs.

Copyrights are secured on a lecture, a sermon, an address or a similar production, a drama; a musical composition; a book, a periodical, a map; a work of art, a drawing of a scientific or technical character; a photograph; a motion-picture.

**Why to get a Patent.** Individual's brain is his own; so is his labour. It is not public property. Two persons may look alike, but they are entirely different characters. Their capacities and abilities quite differ. Everybody cannot invent, and an individual exerts his brain to earn for him and his children reasonable comforts of life in this struggle for existence. He wants to protect his rights and those of his children at the hands of hypocrites, the intellectual thieves, and folly. Both of them for ages have been the enemy of wisdom. When he has made some discovery or invention he desires its monopoly and profit by it.

It is said that more than three-fourths of the industrial wealth of the United States is based directly or indirectly upon patent rights. Some of the richest men of America had to fight out their cases in the Supreme Court of the United States because someones had stolen

their inventions. It was the law of patents which gave them opportunity to assert their rights and had their cases tried

The establishment of patents and copyrights directly or indirectly led to the establishment of capitalism in Europe, and most of the capitalists in America are geniuses who made their wealth through absolute honesty, because they knew that honesty is the best policy, through their developed intellect—through their inventions.

“Life is a business, that means the assertion of one’s own rights. The law of patents and copyrights gives protection to the makers and builders of our civilization.”

In the past great discoverers and inventors suffered a great deal at the hands of folly. But nowadays—thanks to the advance of time—a discovery of truth concerning any material advancement is not only encouraged but rewarded. Richards of Harvard University was awarded the Nobel Prize of £8000 for one page calculation in chemistry. Einstein was awarded the same prize for a thesis of eight pages. One four page letter of Keats brought £1000 on sale.

When an inventor has made some discovery or invention he desires its monopoly and profit by it. He may secure monopoly either by keeping it secret or by a patent.

If he keeps his process secret, he saves the cost of securing a patent in Government fees and the charges he has to pay for the services of a patent attorney depending upon the scale of the attorney and the complexity of the invention. But he takes the risk of having someone steal his invention. He gets this monopoly as long as he can keep his secret. But secrets usually leak out, and once they do, they can have no protection. In the United States as well as for almost the same period elsewhere an inventor is not entitled to a patent after a period of two years of his invention. Besides, the greater danger to secrecy is the possibility of an independent discovery or invention of the same process or device.

An invention which is patented becomes public property after a certain period of years which is different in different countries.

**How to get a Patent.** A man applies for a patent because he wants monopoly—the right to exclude others from making and selling his invention. That means he must define his invention; he must disclose every fact about his invention and what it accomplishes. In order to have full exclusion he must tell others clearly the boundaries of his domain so that they may know where they may not trespass. The word ‘patent’ means something which is opened out before the public.

Patents are obtained by applying to patent offices of



different countries    Patents are issued in all civilized countries

In India copyright is secured by first publication of the work for which copyright is desired. The printer supplies three copies of the work to the Government office for the purpose

In England copyright is effected by the free delivery of six copies of the work for which copyright is desired to the great public libraries the British Museum, London, the Bodleian Library, Oxford, Cambridge University Library, the Advocates' Library, Edinburgh, the Library of Trinity College, Dublin, the National Library of Wales.

In the United States a fee of two dollars is to be paid to the registrar of copyrights, Washington, D C., for securing a copyright

**Infringement.** Patent attorneys often say "A patent does not confer upon you the right to make, use and sell your invention The right was yours by common law What the patent gives you is the right to prevent others from making, using, or selling your invention Without a patent you have no right to sue the man who pirates your ideas "

If a man steals someone's ideas, pirates someone's labour and appropriates the accomplishment of someone's brain, he naturally desires to use protective measures and,

if he can, to recover the losses he has suffered. To sue such a man in the court is not his moral duty, it is also his social duty. Only thus he can protect himself and protect society from the would be infringers.

The patent office only issues the patent. It takes no responsibility of protecting the patentee. It gives him only a licence to sue the *infringer* in the court and thus protect himself. So he has to be on his own guard as to the protection of his rights.

A patent is infringed when a certain person uses substantially the process covered by the claims of a patent *without the permission of the patentee*. For example, a patent for a chemical compound is infringed when the same different parts of the composition or their equivalents are used in the same or equivalent proportions to produce the same results.

To get the idea clear let us consider a particular case cited in the '*Walker on Patents*' a work often quoted by the courts of the United States in making decisions. The Atlas Giant Powder Company in the United States had a patent on dynamite which was manufactured by mixing a compound of nitroglycerine with some absorbent containing infusorial earth in the proportion of one to three. The resulting mixture was in powder form. An *infringer's* compound consisted of nitroglycerine and mica scales in nearly equal proportions. The resulting

mixture contained nitroglycerine in suspension and the compound was known as mica powder. It was more effective, safer and cheaper than dynamite. In spite of so much difference in the two compounds the court decided that the dynamite patent was infringed upon by the mica powder.

If a man makes an invention but gets somebody else to carry out the idea and puts it in practical form under his directions, the other man is not entitled to be a patentee with the inventor because he has merely used his mechanical skill.

The patentee can also sue the Government for infringement and claim damages. But the Government has the authority to use, appropriate and monopolize an invention provided it is of vital interest to the public and necessary to the existence of the Government. Under such circumstances the Government compensates the patentee in accordance with the provisions of the statutes. The Governments of advanced countries recognize the importance of inventions and discoveries for the prosperity of their countries.

In a country like India where peculiar conditions are prevailing it is worth while to warn those who can invent and discover that they should carefully guard their ideas. In this connection even Mr. Gandhi once remarked 'What would regulations do in a land of thieves. The

imitator gets the idea, uses it to enhance his own credit, honour and reputation, not usefully, but to cause trouble and embarrassment to the originator and for the destruction of others.

In an action for infringement there can be no punishment, but the patentee can claim all of the direct and actual profits of the infringer including the interest thereupon.

The penalties for infringement of copyright in the United States range from the minimum penalty of \$ 250 that may be recovered by action at law to the maximum of \$ 1500.

In India Rabindra Nath Tagore was paid Rs. 800 at the Allahabad High Court for infringement of copyright of one of his poems or books.

**The Effects of the Law of Patents.** The law of patents has been developing the sense of honesty in the European people. Nowadays, there, from higher standards, to live upon the ideas of others without giving the originators credit publicly is regarded immoral and dishonest. For this purpose, to protect the rights of their authors and to check dishonesty, the editors of certain American journals do not allow even to quote without their permission. They do not want jackdaws to flourish at the expense of real men; they do not want the

PRINCIPLES OF LIFE  
AND  
THEIR APPLICATIONS

PART II

PRINCIPLES OF LIFE AND THEIR APPLICATIONS

Letters to Gandhi and Other Personalities



After reading the first letter writes Mr M K Gandhi in his "Young India" with the greatest humility, "After all, we, a handful of educated Indians, are shouldering a serious responsibility in gambling with the fortunes of the dumb millions whose trustees we claim to be, A still more serious responsibility rests upon the shoulders of those of us who claim to possess some spiritual perception "

On the receipt of the second one declares Mahatma ji, "There is a hiatus between me and the younger generation I feel I am a back number "

After the third one, resigning the presidentship of the Congress, "to serve the best interests of my country '

## LETTER TO GANDHI I

Dear Sir,

When I was in America I wrote to an American friend of mine the difference between Mahatma Gandhi and Rabindra Nath Tagore by saying that the one fights for the poor masses of India with all his physical and spiritual might because India's problem is world problem. While Rabindra Nath Tagore only appeals for them, not as a beggar, but for the salvation of mankind. But since my return to India, I began to doubt if Mahatma Gandhi understands the evolution of the West. Before the war, the Western world was moving with the greatest speed. Then came the war with all its subsequent consequences. After the war, the Western world felt tumbled down and was perplexed. Then he acted as a brake on the running wheel. So naturally it was attracted to him. Now the wheel is moving again with its usual speed, and I am absolutely sure if he continues his policy (outlook of life), the brake will wear out injuring the people terribly. His latest dissatisfaction about the discipline of his Ashram has absolutely convinced me that his policy is the policy of the defeated. I mean he is merely a follower of the Gospel of Despair.

The greatest problem before us is the life's problem. To me, life consists of difficulties. The progress of any individual, nation, or humanity depends upon their

solutions Of course, the difficulties of the Western people are absolutely of different character from those of ours To illustrate, the Western people conquering one forest go into another, and naturally have to face newer kinds of difficulties which to the unscientific and untutored mind seem to be of abnormal nature So naturally he rejects out the whole Western civilization While our people entered one jungle and for various reasons have not been able to get out of it In other words signs of degeneration are apparent among us Lying has come to be regarded a qualification or is used as a matter of policy If I tell you the tales of my personal experience with both the great and the small in this country, you will be convinced that I am absolutely right I am sure that with the development of a little more manly character in the American girl that upon the understanding that man after all is a regular brute, that upon the successful study of the conditions in which she is placed in the march of civilization as well as upon the realization that this world is of diversity and the next of Unity, the number of undesirable divorces will decrease in the United States To me divorce means nothing but to admit our mistakes and correct them That is the only way to progress And I do not understand why a woman should stick to a man who for one reason or the other has ceased to be a man I do not believe in the slavish faithfulness of a Hindu woman We have to sort out the weak to make this world a healthy one I mean the



production of conditions which will allow the weak to live but not to propagate. Unfortunately, when the Indians, whether students or otherwise, go to the Western countries, they generally notice the dark side of the march of civilization. They generally cite the abnormally high number of bad women in Europe. After the war, the whole economic condition of Europe was upset. Our honesty or dishonesty is nothing but our economic problem, says a Communist. But I am absolutely sure that the introduction of healthy institution of birth control as well as other scientific means will solve their difficulties within half a century. While the permission of such a state of affairs to continue as in India to day will increase the number of such women several times during the same time.

What is after all Hinduism. Mohammadanism, Christianity, the Eastern or the Western civilization? They are nothing but different explanations of life, given by original minds born in different countries, influenced by different environment. Whether he is the author of Gita who tries to prove that the soul exists after death 'It never burns, it never dies. Or they may be the authors of Upanishads who try to seek harmony between the physical and the spiritual forces. There is a very interesting story in the Upanishads to illustrate this point. Kachit comes from the kingdom of the Devas to Devayani's father to study under him, and there they began to love each other. In spite of the fact that Kachit is obliged

to her father for the safety of his life twice, still he refuses to marry her. Before his departure, both of them are standing facing each other and Devayani starts: "You came here, took the garland out of my neck, and broke it into beads. The beads are lying on the floor never to be picked up again. I curse you that the knowledge you have gained here, may be useful to others, but not to you."

"Whether I love you or do not love you, only the future will tell. I came here with a message, with the mission must I return," was the answer

But what does it mean? Or they may be the authors of Yogas who after long meditation come to the conclusion that this world is Maya, that is, the shadow of reality. They were all free-thinkers. During the last seventy years, Darwin has changed the whole surface of Europe. Now comes Sir J. C. Bose with as much synthetic mind as that of Darwin, attracting for the first time the attention of the Western scientists by giving eyes to the blind wireless and then through his epoch-making discoveries as a plant physiologist, comes to the conclusion that life came out of non-life. The study of environment in which we are born to better conditions for the human life to survive is materialism. To illustrate, the proper study of the soil as well as that of plant will increase the production several times both in quality and quantity enabling more population to support. Again, even a woman of the street is ready to quit her

profession on the asking of a gentleman to marry her. This clearly indicates her desire to be good if opportunity be given to her. But doing good to others is written only in the fate of the survival of the fittest. Thus arises the importance of laboratories of all kinds to solve our difficulties. And thus any nation which neglects the study of materialism will suffer terribly. Realizing the conditions in India on my return from America about two years ago, I predicted the future destiny of our people referring particularly to Hindus before several well-known men. The Bushman has died out; the history of the Vanishing American is well-known. The number of Marquesans in the South Sea Isles has reduced from one hundred and sixty thousand to twenty-one hundred in a century. If a man is suffering from some disease and the remedy is not found generally the man dies. Only recently, Sir J. C. Bose in his convocation address at the University of Allahabad remarked, "There is a general weakness in the life of our people. If the remedy is not found, the result is inevitable." Individual's history is the history of the difficulties he encounters. If he overcomes those difficulties, he is successful. The penalty of failure is either death or degradation. So of nations. The destiny of the human race is not led by religious superstitions nor by sentimentality, but by the dynamic forces of life. Those who understand these forces, they live; those who blindly follow them they merely exist; and

those who can neither understand nor follow, die out. Such is life.

*Adaptation is a counting factor in the struggle of life,* and any people who do not adjust themselves to newer conditions of life suffer terribly.

The success of any nation depends upon the production of leaders who can understand and visualise the forces which govern life. From my personal experience in this country I can say with certainty that the habits even of our leaders are those of primitive type ; for *practice of self-sufficiency is common* among them. While life in the beginning was governed by one principle: it may be called the law of self-sufficiency, Independence or law of monopoly or that of selfishness. Later on, in the march of evolution, the separation of one organism having both the reproductive organs into the male and the female resulted in the introduction of two more laws which govern the destiny of the whole human race. I mean the Division of Labour and the law of sacrifice. Whenever there is a perfect equilibrium between love and hate, the resultant force is sweetness. It may be an example illustrating the law of harmony. The law of replacement is working whether in the human mind or without it. The stronger ideas will replace the weaker ones. This is the law of struggle. And what is religion after all ? To me, it

is nothing but obedience to the laws of nature. Those who do not act according to them are irreligious, and irreligious people have been called sinners. And you know. "The wages of sin is either death or degradation."

India is stagnant, particularly Hindus, while life consists in movement. In reality all our institutions are those of slavish nature, established by the defeated people.

Whenever anyone asks me the difference between the East and the West, I generally refer to an old story in the Upanishads. The Brahman after finishing his studies comes to Sadhana, the king, who asks him, "Say, Brahman, have you finished your studies?"

"Yes, Maharaj, I have finished my studies under the most learned Brahman in the country," was the answer.

"Then you must be knowing what happens when a man is dying," asked the king

"No, Maharaj, I have not learnt it anywhere. I will go to my Guru and ask him the solution of the problem."

His Guru also could not answer the question. So both of them come to the king and ask its solution. And the king starts by saying, "This is the difference

between the son of a Kashtria and the son of a Brahman....."

The same is the difference between the East and the West. You must be knowing that the Ramayana and the Mahabhartta are the stories of two Kashtria families. The author of Gita, Krishna; Mahadev and Parvti; Vaid Vayas, the compiler of the Rig Veda and the Purana, were also Kashtria. Upnishads also came from the same caste. Budha and Mahabir, the founder of Jainism, were also Kashtria. Briefly, so came the whole train of Sikh Gurus. Personally I do not believe in this institution. To me little revalries, bitter jealousies, and all sorts of narrow-mindedness are nothing but representation of evil or that of war. While the salvation of an individual is through peace of mind.

## LETTER TO GANDHI II

Sir,

The greatest source of philosophy is one's own heart and the greatest source of knowledge is one's own experience of life. The real development of the brain consists in following reason and in thinking right.

Discovery of the laws of nature and the study of human nature have always been and will be the greatest problems before us. Whatever may be Shastras to you? To me, they are nothing but mere fence-guards, sign-posts, signal posts, and safe-guards. I mean a certain and uncertain attempt of a limited field of truth. You will permit me to say that the function of any Ashram, university or institution is to study the forces which govern life. And as long as the present-day system of teaching prevails in our schools and colleges where the student is stuffed with unconnected material, elements taught with rules having so many exceptions, training given in new and entirely a foreign language, the object of education will not be understood by the public. Unless the student realizes that everything he eats, drinks, puts on, and uses is nothing but a chemical combination, that an aeroplane is a chemical museum, that the very longevity of life is connected with the processes of oxidation and reduction and depends upon the observation of the laws of health, that every thought

we think is a chemical reaction, that the intermarriages between the near relations is against the laws of genetics, that the very existence of the inferior and the superior complexes in both the males and the females rejects out the law of karma, that the evolution of the male and the female from one organism having both the reproductive organs resulted in the introduction of the Division of Labour and the law of sacrifice that the man who discovered the use of wheat or barley and how to multiply them was a great man that the radio voice combined with other scientific instruments will counteract the evil effects of the concentration of population that the civilized man is one who lives according to the most recently discovered laws that religion is nothing but obedience to the laws of nature, that the present stage of civilization has been obtained through constant, hard, painful and laborious efforts, there will always be strong voices against our progressive march of civilization. The permission of such a state of affairs to continue means allowing the forces of ignorance to overcome the forces of knowledge

Hatred is not in my dictionary. Forgive and forget is my principle. Confession is a necessity for the soul and I have not confessed yet, though I bowed down in all reverence to your sincerity and old age in my own fashion. It was a year before last during Christmas, that I expressed certain of my disappointments to an



American returned friend of mine, and he was recently married. He told me, "We, Hindus,....." And my personal experience with Hindus, both here and abroad, has not been different. I cannot repeat here the whole of my experience. To sum up, the religion of Hindus is the religion of cowards, and a coward has no tender feelings. Among cowards, everybody for himself and devil for all. The world has passed that stage of life when the wolves could protect the sheep. Briefly and lastly, I was in the city of pandits and there I noticed one pandit exploiting the psychology of another pandit in the name of religion, and the head pandit in turn being afraid of his own weaknesses shifted or rather forced his own fault upon the shoulders of the other pandit, the poor clerk being the last man to bear the blame. It seems to me that the greatest business in India is religious exploitation, either through ignorance or through hypocrisy. And I do not understand why you should not prevent the people to touch the feet of the so called great men. It kills the very fighting spirit of a man, and courage counts in the struggle of life. If you conduct the research in a scientific way you will find a sufficient percentage of Hindu fathers living with their sons' wives, not to talk of daughters. Some of them who pose themselves to represent the interests of the poor masses are equally "morally degraded." Very recently I investigated a case in which I found out one widow exploiting another widow and that for years by posing herself to

receive the soul of the dead husband of the latter who could never in her life detect the fraud played upon to get money and obedience out of her. Such is life. we have to sort out the weak.

India's problem is world problem. In the opinion of the late Lala Lajpat Rai the problem of India is only meant for Gods. The English genius has absolutely failed to understand the psychology of the Hindu. Mahatma Gandhi introduced the phrase, "slavish mentality," but has never been able to explain it. Napoleon would decidedly fail in handling the problem of India. Hard words is the only immediate remedy for a clever and obstinate man woman. Napoleon's appreciation of the dominance over woman by the Asiatics indicates that he was merely a follower of the Gospel of Despair. I appreciate these Englishmen—the grant of the right of voting to women is another forward step in the progressive march of civilization and that goes to the credit of these Islanders.

The real brain does not only think in the terms of the present circumstances, nor is he the creature of his own time; he always interlinks the present with the past and the future. He is always a practical mind. The greatest problem before an English statesman is not how to rule India, but how to be friendly with India because he realizes that the economic supremacy of America, Labor Movement in England, Communist propaganda, and

Indian agitation do not allow England to rule India any more. He further realises that in a quarter of a century the whole of Europe will combine together against American economic aggression. And England cannot cast her lot with Europe because British Empire is an Asiatic Empire.

I may or may not differ in political opinion from Motilal or Gandhiji. But for their sincerity of purpose I pay my homage. To me, any form of Government which gives the chance for the builder to build up is possible, and I do not understand why the sons should be allowed to enjoy the same privileges with no capacity of their forefathers. The world had failed to produce an intellect which could save the lives of one and a half millions of people at the hands of Lenin—undoubtedly, a superb and comprehensive brain. But such things do happen in life. Henry Ford was too young at that time.

Doing good to humanity is not apart from spirituality. Benefiting humanity is greatness. The inventor of spectacles put thousands of people under debt. The greatness of any man is counted by the extent of good he has done to his society and indirectly to himself. The sanitary conditions and the condition of the untouchables cannot be improved without the production of sanitary, ceramic, and chemical engineers. Food products cannot be controlled without the help of a

food chemist in an industrial organisation decidedly, not on sentimental grounds And what is spirituality? It signifies that the salvation of an individual is through peace of mind So little rivalries, bitter jealousies, and all sorts of narrow mindedness are nothing but representation of evil or that of war All democratic institutions are truthful institutions Our caste system is aristocratic Slave drivers will die out of their very selfishness, the name of Alexander and Napoleon will be remembered by a few students of history, it is Budha and Christ that will live

## LETTER TO GANDHI III

Mahatma Ji, ,

The greatest problem before us is the life's problem. To me, life consists of difficulties. The progress of any individual, nation or humanity depends upon their solutions. Buying, selling, etc., of girls is not rare among us. Riding on donkeys by Hindu women and killing of children of other women to bathe on their dead bodies to beget a son are examples of grossest superstition and of meanest nature. Why? One reduces a woman to slavery and she becomes a plague. The Prophet was a great Prophet when he gave property rights to women. The best remedy, I know of, is the grant of equal rights to women, free education, and marriages of boys of at least 18 and girls of 15 right in the court. For the satisfaction of PROTECTORs of women, who will ignore the worst evil of sodomy and other evils of equal nature, women-magistrates may be appointed. Undoubtedly, we, a few educated Indians, are exploiting and gambling with the fortune of the "dumb millions," particularly women whose trustees we claim to be. Decidedly, a still more serious responsibility is coming upon the shoulders of those who live by administering spiritual doses. A man is known by his actions. The activity of a man is known by his power of earning money, and the development of his spiritual sense by

giving it away ; and not by charitable business.

India is really a land of snobs. The English aristocracy in India is the greatest nuisance, and the inferior complex among Indians, a set of flatterers and cowards is the greatest absurdity. The former for their greed of money naturally like the latter who live by exciting the pity and pleasing the tendencies of their masters. The policy of non-interference by the British in India in the religion, customs, and usages of the people has been most dangerous, and is either due to lack of moral courage or hypocrisy. It encourages the inferior complex to maintain and propagate the social evils which are now reaching the last stage of abomination. Both of them are dragging the honour of their respective countries into the mire. The permission of such a state of affairs to continue means allowing the destructive forces to overcome the constructive and productive ones—the so-called revolutionary. In a quarter of a century, the inferior complex, which is fast increasing, may far outnumber the superior complex so as to be uncontrollable.

I laugh at the idea when anybody asks me why I change my religion or my policy (my views). Our religion which I define as obedience to the laws of nature is the result of our convictions subject to change on realization of further information and of hard knocks of life. And a politician has no policy. He is the child

of circumstances. He uses violent or non violent means as the occasion arises. He is the creature of his time. When called to the helm of affairs, he adapts himself to judge the newer conditions of life, and therefore adopts ways and means to serve the best interests of his country. Even from a purely political viewpoint closing of schools and colleges, courts etc., is out of date. Burning of cloth is merely ridiculous. The only items of non violence which will appeal to any reasonable man is the non payment of taxes and the boycott of British goods. These are the days of action. Non violence, if practised without the object of exciting the sense of pity, but to defend one's own rights is decidedly a far superior weapon to that of the forces of violence. Non violence is probably the best means of developing courage, which I define as resistance against wrong, in people like ours. It has decidedly a far more moral influence, and is humanization. Hunger strike is the creed of non violence with the only difference that the one is within and the other is without the bars. If the English do not change their policy, and you succeed in the programme of the non payment of taxes and boycott of British goods the results can be easily calculated.

India's problem has always been of social adjustment and of spiritual satisfaction. And now India needs newer adjustment. We have to make something of this mess of a country. I mean the creation of conditions in which there is a fair competition, honest and happy

life I know there are many Manus in the Western countries. The greatest industry, they will build up is the means and preparation of war. Nothing is impossible in this world. In future, the invisible aeroplanes may hover over cities, only to be detected and destroyed by invisible rays. And I do not understand how are we going to control our railway industry, which is second only to that of the United States of America without giving fundamentals to our students in a railway engineering college. But Manus are losing their ground in England, the history of the Vanishing American is well known. Our Manus would pour hot mercury in the ears of a Shudra. American Manus burn a Negro alive. While Ram Chandar will go to the house of a washerman to ask his pardon for forgetting to invite him to his coronation feast. Our caste system is our racial problem, verna means colour. There is a shloka in the Mahabharata "The colour of a Brahman is white (too white, blue eyed, and grey haired) the colour of a Kashtrira is red (darkhaired dark eyed and white with reddish tinge), the colour of a (Vaish means intermixed) is yellow, the colour of a Shudra is black." Our Manus have practically long disappeared, but they have left behind them their sense of snobishness and foolish pride. Yes, sir, there has always been a difference between the man who is morally good and the man who is morally afraid.



## LETTER TO GANDHI IV

Dear Sir,

Most of the advancement in knowledge or progress of life has been through the consuming desire on the part of the workers to ascertain the truth without seeking any credit or honour; Galileo died for it, and Darwin fearlessly asserted it. His greatest reward is the satisfaction of his own mind, which he receives only by the wider diffusion of his ideas. It really gives me a great pleasure, or rather I would say, it has become a passion with me, to infuse in the minds of our young people the idea: the testimonial of sacrifice is deceptive. This attitude of mind is the natural consequence of my personal experience. To illustrate, I was standing by a life-member of a certain college, who, at the very utterance of a few words from me, vehemently said, "I am not interested in politics," and I was not talking of politics. These self-styled representatives of the Hindu community are exploiting the psychology of the faithful in the name of social virtues; but in reality they are sucking the blood of the people to satisfy their own sense of honour or reward of respect. To a thief and a slave honour is more than death. The activity of a man is known by his power of earning money and the development of his spiritual sense by giving it away. So did Gandhi; so did C. R. Das. To me, life is a business considering human factor. The business of

to-day is the business of intellect, and hence of service

The world has come to this stage of life through evolution and mutation. I mean the process of slow growth and sudden change. The destiny of the human race or that of India is not going to be led by Mullahs, Pandits or Pandas, but by those who try to understand and visualise the mysterious forces of life. If I could, I would abolish all titles, particularly those of Maulana, Pandit and Mahatma. These combined with spiritual doses hypnotize the people. Of course, I admire Mr Gandhi for his principle of non violence.

Obedience and co operation are the positive and higher phases of human evolution, not non co-operation. Napoleon would be afraid of breaking an ordinarily ignored law even in the presence of a common soldier. When a man accustomed to better food or better mode of living falls back on poor or old one, he non-cooperates, wrongly to correct, because either he cannot get them or he cannot appreciate, due to mental weakness, the higher state of civilization. A Hindu does not eat from the hands of Mohammadan or he non co-operates with him because he is absolutely convinced of the principle of non killing, and it is very doubtful if he is right—this act, undoubtedly, on the part of a Hindu adds to the other's feeling of inferiority or insult awakened by his consciousness of the rising standards of manliness and self respect. All nations

take meat, including beef; the whole world is not mad. Elasticity of mind and the spirit of tolerance are some of the highest virtues, because they lead to co-operation which is the foundation-stone of all our morality. The requirement of the strict observance of unreasonable rules, laid down by some unknown sages of the dim past, and other stereotyped obligations, which, since long, have under-gone neither reform nor adaptation, forced upon only obstruct the development of free-thinking and stunt the growth of mind of the younger generation, as well as give rise to many quarrels between Hindus and Mohammadans over an unproductive cow of ten rupees, sometimes resulting not only in the loss of time and waste of money, but also in actual deaths of many human beings. I can name many a well-known hypocrite who is exploiting the ignorant in the name of self-regarding virtues of non-killing and non-meat-eating, but judged from their actions are perfect specimens of devilry. These are the people who get revelation. I never got one. Propagation of hypocrites is by no means any spread of truth. Of course, I respect a conscious vegetarian and a conscious non-co-operator. Andrew Carnegie always promoted the man who had the judgment of breaking an iron-clad law. Either way we non-co-operate to exist, with the hope of better living. Therein lies the merit or demerit of non-co-operation.

## 256 PRINCIPLES AND THEIR APPLICATIONS

By all means the turn of events lies in the material conditions of life, and the spiritual bent of the people acting as a brake. The first problem before an almost every individual is to make a living, secondly, he wants to save himself from future miseries, thirdly, he desires to have some prestige or authority among his fellow men, and this is the reflection of his sense of self respect, fourthly, he desires to do good to others if opportunity be given to him. But doing good to others is written only in the fate of the survival of the fittest. Briefly, an average individual is interested in his self protection and self advancement. So only that society or organization can prosper which satisfies its members both materially and psychologically.

## LETTERS TO OTHER PERSONALITIES

30.3.47.

Dear Sir,

This struggle for power-politics which means kicking up in all directions by an untrained, restive and intoxicated horse without a rider on it has brought us to the present situation. Practical results show that you have been instinctively preaching violence under the garb of non-violence. This is expected of a life of reaction and negative imperatives guided by an otiose and congenital philosophy many times tried and defeated in Muslim period. If there can be no halt from this baneful struggle for power anyone can see the future. For myself I am prepared to appear before you at any time. You recognise, I believe, that I am learning to use diplomatic language; which means I carefully guard ideas from slipping out. I wish politics from the department of fooling the people and from the art of collecting funds from the rich and votes from the poor on the pretext of protecting each from the other changes to something better.

Leadership we only adore  
In time of danger, not before ;  
The danger passed, leadership put ashore ;  
Intoxicated with power politicians roar  
And offer fifty rupees for his lore ;

The country bleeds politics pleads for more  
 Power-ridden politics is bent on more gore

12 10 47.

Dear Sir,

Political agitation is quite different from efficient administration. Our egregious follies or Hindustan's follies, for definite reasons, will be endless. We or Hindustan—rather Hindus—are hurling down towards death. Whether we like it or not it is the vital fact of life. Of course, the world is not losing anything. For it, it is a natural course, of history, and fools cut at their own feet.

This ignorant, criminal, reckless and impulsive struggle for power politics and the habit of stealing ideas on the part of politicians who find it hard to face unpleasant facts and prefer to cling to the atmosphere of happy illusions has landed us into the poisonous fruit of partition of the country. When progress is not accepted, neither allowed to go forward nor pushed forward traditional life is factual. All these national calamities, tension and bloodship due to enormous errors of judgment would have respectively turned into national welfare if I had been invited to the Congress Working Committee meetings at Delhi. I could do considerable good to India by my two thoughtful acts, while you nullified it due to your bad judgment. Can this criminal ignorance be called

nationalism is a straightforward question before you? All this rank slaughter with its privations and untold sufferings will pale into insignificance before the calamities that await the country.

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I was in the office of Pandit Jawaharlal Nehru on the 13th of April (1947) and on being asked by his then Secretary, Sradar Tarlok Singh, what I wanted to see him for I told him : if I were not with Panditji in Delhi the Punjab would become a slaughter-house. After a few more words he came down telling that I might be a man of genius and asked me to take the chair in the corner and he would get time for me from Panditji.

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Dear Sir,

12, 1 48,

The world war I was over. It trailed miserable conditions of life upon the people of Europe. They were confounded. Europe developed its armies, navies and air forces to a remarkable extent. But they did not promote the means of peace with the same speed. So they were eager to hear about them from any quarters. At the opportune time you began to make din of non-violence. They were attracted to it hoping you may find some solution for the dissolution

of the theory of war. You also deserve the credit for bringing the process of non violence to the notice of the most highly developed intellectual mind. He naturally began to develop the process. At the amazing speed of the progress of the effective non-violence of persuasion by reason and of intelligent psychological control even Lord Zetland had to remark "India is the only country where a great revolution takes place without bloodshed." Its advance continued and was further worked up speedily to the attainment of what, as it appears from the ways of the politicians, the people politically wanted.

*With the achievement of 'Independence' India entered a new phase of its political life. Getting despondent at the refusal of invitation from the Congress Working Committee meetings the intellectual mind became unconcerned and indifferent. India came out in its nakedness, its life of savagery appeared in the form of loot, arson, murder, rape and what not. The spell of Mr Gandhi's non-violence vanished. So naturally India's prestige abroad lowered. Imitators make bad jobbers. Smallness, as a matter of course, makes a country small - its self concerted confidence overlooks greatness its morbid hyper sensitiveness overstates its rights existing only in air leading to quarrels and ultimately to war, its continual enormous errors of judgment turns every national planning into national calamity. While greatness makes a country great*



3. 7. 48

Dear Sir,

I need not go into the past record; it is known to you as well as to me. Working under the influence of the tragic past and personal experience of ransacking the ages and spoiling the climes, first, I find my presence essential in Delhi where we can meet as a friendly team consisting of Rajaji, Patel ji and other jies for the discussion of the country's important affairs required to replace the trial and error method, as far as possible, by the clear-cut ways of wisdom, and then follow the course decided upon. It is immaterial for me whether I am in education or technical department or in any other department; but, I am sure, I would pay far more to the Government than I would get from it by my original constructive thinking. I am not sure of convincing others of what I say; people learn better through bitter experience: on the expression of my opinion about the establishment of Pakistan nearly four years ago after my refusal to the repeated requests of a colleague of mine I found him making a propaganda against me to my resentment; and when he came, after the establishment of Pakistan, to ask my opinion again about the future of this part of the country I found him respectful on my demand of two hundred rupees as fee.

17. 8. 48

Dear Sir,

With failure—at least partial—in my attempt after the

experience of operation upon the minds of the top most Indian leaders for more than fifteen years to shake them off their sophistry and perverse principles I naturally came to the conclusion that reason is scarce, and therefore imagined of the inevitability of war more than one and a half years ago (26 I 47) Professor Moore stands out with me, other pre eminent writers hold the same view. If a person tells you that a mountain has changed its place, you have the right to believe it, but, if a person tells you a certain person has changed his character, do not believe it—Mohammad It is as hard to change a person as to wear out a stone So reforming or changing the course of history is, at least—if not impossible—an uphill task

Certain incidents dragged me into the arena of Indian politics, and I found the Congress Party—as it was—a mere debating society; poor Gandhiji helplessly bemoaning at the Calcutta Session of the Congress "I do not like clever politicians" The rapid flow of new ideas strengthened the Congress organisation and the ruthless attack on the leader of the Moderate Party removed the only then formidable obstacle in the way of the Congress The Congress succeeded at the follies of the Moderate Party; and the Muslim League built itself at the blunders of the Congress But none of them came to power on their own strength (Most of the people succeed because of other's follies, and not because of their vision. But luck is not ability. In nature inability is as much

punished as crime; the blow is given without a warning; and the victim is left to find out the cause himself or in a dilemma ) That is why both the Dominions are jolting

Politics lives on expediency; and not on principles. When the Public trust is betrayed and the edifice of a State is constructed on the perilous cast of expediency, however its apparent stability, it is always infected with decay at its very foundations. Diplomacy with its borrowed and wrong ideology, with thoughts which are someone's else's opinions, with its life a mimicry—however sincere and honest, overzealous and benevolent—actuated by misguided love of fame and power, of prestige and self-aggrandizement, arises from self-conceit, which thinks it can hoodwink the whole world which is impossible, and ultimately invites degeneracy and ruin—later on only to be shocked. Politics—both in thought and action—concentrates upon choosing a path which would affect the collection of votes in its favour regardless of what may happen to the people. It ignores the interests of the coming generations because it cannot secure votes from posterity. To be the favourite of an ignorant multitude politics descends to their level, it yields to their prejudices, and substitutes them for principles, and instead of enlightening their errors it adopts them, and furnishes the wrong philosophy for their propagation and defence. I am not here talking of statesmanship and superstatesmanship, nor am I against democracy which with all its faults and a

hundred thousand evils possesses one virtue outweighing them all

I was inside Pakistan life there rolls as good as here

1 1 49

Dear Sir

Let me congratulate you on this first day of the new year of 1949 on your skilful rejection of the celebration of your birthday which ceremony in its performance encourages derogatory hero worship—against the ethics of democracy—and allows politicians to seek cheap popularity for building their prestige and maintaining their political position by playing upon the suggestibility of the people and ask you to inspire realization in the authorities of our universities of their duty for the development of free institutions and the creation of new intellectual environment of right thought

Democracy is not ochlocracy and timocracy so badly and wisely informed of by Plato being pragmatic in nature and reasonably resistant to national doses and believing in concrete and substantial results democracy for the sake of its own survival and of its success realizes the importance of the use of the best brain for the best opportunity for the good of the people Lenin never believed in democracy he admitted that he preached democracy with deception he taught the practice of lying and diplomacy in political dealings and for obtaining political ends.

A politician or a diplomat competes like our any animal progenitor in the mad race for power; he practises diplomacy in order to foster his greedy ambitions or rather instincts of power, fame and self-glory under the guise of ideology and system; he tries to retain his leadership by airing an attempt to recover the lost ground—and not irreparable losses—as an achievement, and under various other cloaks, indirectly for material gains including those of favouritism and nepotism; and for these reasons suffers from the disease of jealousy—which disease is destructive by nature, does not believe in fairplay, and, on certain occasions, reduces itself to meanness, and lives on the medieval standard of hard work and stealing and appropriating other people's ideas; and democracy demands that jealousy should be defined and the significance of the definition be shown to them for reform. The ambitious politician is more anxious—and would wait for decades—to do something for himself than to have it done by someone else, although that person is far better qualified for the task. Then why should he send the best brain to the U. S. A. and increase India's prestige? It is against the fulfilment of his greedy ambitions. Why should he delegate him to the U. N. O. where he would elevate his country's name by directing them with his remarkable power of persuasion and inventive ability? It is against his selfish means. Why should he utilize him some other way for the welfare of the people? It is against the realization of his personal interests. Why should he send

him abroad for bringing him in contact with Stalin and Truman in order to change the direction of war towards peace? Then what of the pride of his leadership in the eyes of the masses? What a pity! What a stupidity! He does not see with heroic conception and foresight, he is not shrewd enough to make use of him, externally or internally, even to double his own reputation

16 2 49

Dear Sir,

Instead of getting into the whirlwind of politics upon my writing to Gandhiji and his colleagues, if they had created facilities for me, India would have attained this Swaraj—1935 Constitution with the right of framing a new Constitution—at least, if not earlier before the war. If I were permitted to attend the meetings of the Congress Working Committee—which I requested for in the humblest manner—there would have been no partition of the country. I was fully acquainted with the tenor and the trends of Indian politics as is proved by my statement to the Nawab of Mamdot at his residence in Lahore to the effect that Sir Khizar Hyat Khan would resign within three months and he did resign after two and a half months. The experiment of learning through bitter experience has been too costly for both the people and the leaders missing opportunity after opportunity and ignorantly fighting of phantoms—and not evil—is dismantling history

Democracy is not sentimental; it tends to teach—even to destroy—by the principle of adversity; it attempts to replace the life of sentimentalism, emotionalism and impulsiveness and the age of self-complacency and self-conceitedness by the stage of self-criticism and self-analysis as a sound foundation for the realization of its aim of a Government by the best persons—best in brain or character—chosen by the people of sound judgement. One of its salient features is Opposition; whose main function is the maintenance of freedom in general in this imperfect world and save the country from misgovernment at the hand of the majority party by pointing out their errors of judgement and blunders of action—it is not expected to correct them—to their realization as well as to that of the public.

After all, democracy is a means, and not an end. Servile imitation of democracy or of socialism, or of any other ideology characterized by catch-phrases would not take the country very far, simply because our conditions of life are different. The main object of a superstatesman should be the welfare of the country and not institutions or borrowed ideologies (written before 10. 7. 47). Imitation at the utmost, is successful execution; it is not efficiency; nor is it progress. Even literal correct application of imitation under different circumstances produces adverse results. Above all, imitation suffers from the lack and ignorance of the next steps to be taken in this world

of unrepeatd, irrevocable and one-way marching-on events.

I was pleased to meet a well-known leader. He is an awakened mind, liberal in outlook, intellectually honest—he would freely name Western authors who influenced him; he realized that on the scale of civilization or evolution the stage of a man who steals or appropriates ideas of others in any form or any shade without due acknowledgement is the same as that of a cat who runs away with a piece of bread without compunction as to the honesty or dishonesty of the act. He told me that in India there has been a collapse of brain for a thousand years.

On the realization of distinction between important and unimportant facts a realist would always readily spare time, consider and show the highest regard for a person of real importance; culture is the capacity and ability to understand and follow a genius, said Sir Fazal-i-Hussain.

13. 5. 49

Dear Sir,

In the lives of persons of fanatic love of honesty, of justice, quality and progress there are a number of times when an overwhelming desire arises in their minds to communicate belief to others. This is one of such occasions.

Every Indian would regard you with the deepest



respect and would look towards you with hope; they know you gave up your comforts and luxuries of a princely life; you sacrificed your and your family's interests; and miserably suffered for the love of our motherland.

I read your open letter with great interest. Hard experience with its privations often repeated appears to be mankind's best corrective. Incidentally I had to study politics, and I probed it accurately because of my correct observation—which quietens the mind and often brings triumph after successive triumphs—our very civilization sits upon inventions. It has been well remarked by more than one observers of the whole race of politicians' little constructiveness and barrenness of inventiveness. In the depiction of the character of a democratic politician nobody can excel the master-mind of Germany. Even in the United States where democracy is apparently successful parents do not encourage their children for the career of a politician because it leads to graft and crookedness. Most of the politicians come from the profession of law, and law does not require any brilliancy; no doubt, it demands the exactness and the refinement of language and hard work for comparing cases. A good lawyer is strictly a businessman with a Bania-like calculating cast of mind who makes his livelihood by the interpretation of the printed matter (while you distribute it gratuitously). An average lawyer possesses hooking mentality and is a worldly-wise expert in playing upon emotions. So politicians are

people with moribund conscience. The popular mind is fanciful, fearful of facing unpleasant facts, short sighted who does not look beyond his nose, and is opportunist. (An opportunist jumps at the idea of someone and tries to use it before the inventor gets the opportunity of making use of it for himself.) So the attainment of a new age for a new world—a new era in civilization—which you aim at requires the substitution of the scientific mind for the popular one.

July 31 1949

Dear Sir,

I read and re read your letter with amative, deferent, appreciative and vital values of the human psyche. An average person's life is of combative and destructive instincts.

One of the reasons of why I look towards you is the urge of undying love—however despondent may one be—for our country. Incidentally I had to study Indian politics—and world politics too. In those days the conditions prevalent in the country were abnormal. Honesty was folly, morality stupidity, self conceitedness wisdom, and politics criminality. I do not mean the tenor to day is much better, in certain respects it is, no doubt worse. I was rather compelled to understand, experience and experiment with Indian nationalists. I could observe Moderates as people with no guts, I

divided Gandhites (Gandhism was conservative Hinduism defeated several times during the last thousand years and a revolt against Western modern influences) into saints and crooks, knaves and morons; I found the Liberals self-respecting men who would not risk. But all had in common one trait of living upon some one's else's ideas. The revolutionaries gone into national madness befitting and expressive of their vigour of body and mind for their dream of Independent India I met when abroad impressed me of their strength and trust; but I found in them little evidence of that poise or restraint which one expects from students of world problems, or vision which characterizes pronouncements destined to sway the destiny of nations.

20. 6. 49

Dear Miss,

In this world there are certain persons—though the number is very small—who are interested in wants which are of more importance to them than marriage and family. The most outstanding examples of this type of character are of Budha, Christ and Ulysses—the last one is the Greek hero of Homer's epic. Ulysses leaves his kingdom, wife and son to wander again in search of adventure and knowledge :

It little profits that an idle king,  
By this still hearth, among these barren crags,

## 272 PRINCIPLES AND THEIR APPLICATIONS

Matched with an aged wife, I mete and dole  
Unequal laws unto a savage race,  
That hoard, and sleep, and feed, and know not me,  
I cannot rest from travel

This is my son mine own Telemachus  
To whom I leave the sceptre and the isle—  
When I am gone He work: his works, I mine

24 7 49

Dear Sir

Your letter of 7th instant reminds me of my past in comparison with your present stage of mind I firmly believed in the principle of Love but certain unfortunate bitter experiences made me shift from the standard of love to that of love and hate though even now very reluctantly and conservatively, I change from love to hate for justice on account of the belief of regarding a man innocent as long as he is not proved to be guilty The greatest source of philosophy is one's own heart and the greatest source of knowledge is one's own experience of life—one of my closest elder relations for the fear of the exposure of his sins after his failure to degrade me by the temptation of a young unmarried girl in a healthy manner tried to murder me Since my blind impulse for respect of an elder gave way to the assertion of reason

In any great man's life there are three respective periods of realization of destruction of the bad ways of life and of construction

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